

Diagrammatic Representation
of the
Physiology of Jaundice

S U R G E R Y

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The Physiology, Diagnosis and Surgical Aspects of Jaundice*

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Jaundice may be defined as a yellow discoloration of the skin and sclerae as a result of an increased amount of bile pigment or bilirubin in the blood. Certain secretions such as tears, saliva, sweat and the cerebro-spinal fluid remain unstained, no matter how deep the jaundice may be. Once the skin is stained it remains so for some time after the serum bilirubin values return to normal, because it is the deepest basal layer of the epidermis in which the pigment is deposited, and the yellow color disappears only after this layer has been shed as the outermost layer.

There are two standard classifications of jaundice:

(a) McNee

1. Hemolytic.
2. Obstructive.
3. Toxi-infective or hepato-cellular.

(b) Rich

1. Retention
2. Regurgitation.

Physiology of Jaundice

The life span of a red blood cell varies anywhere from one month to 180 days. When the cell reaches senility, it is destroyed by the reticulo-endothelial cells of the spleen and bone marrow and the Kupffer cells of the liver. The disintegrated red cell liberates its hemoglobin which is split into two constituent parts—haemosiderin, an iron-containing substance which is stored in the iron depots of the body to be used again for the synthesis of haemoglobin, and hematin or bilirubin-globin, a useless pigment which is excreted by the liver. Since red cells are continually being destroyed, bilirubin-globin is present in the circulation in small but constant amounts of 0.1 to 0.3 mg. per 100 ccs. of serum (icterus index of 4-6 units).

Bilirubin-globin, before it has passed through the liver cells, to have the globin molecule split from it, cannot pass the renal filter. Consequently jaundice associated with an increase of this type of bilirubin is called acholuric jaundice. Bilirubin-globin is also referred to as prehepatic bilirubin or simply as bilirubin I.

As the bilirubin-globin passes through the liver cells, the globin molecule is split free and sodium bilirubinate is formed. Sodium bilirubinate or post-hepatic bilirubin or bilirubin II, along with bile salts, cholesterol and other secretory and excretory substances of the liver constitute the bile which passes down the bile ducts at a rate of from 500 to 1,000 ccs. per day. Sodium bilirubinate, as opposed to bilirubin-globin, will pass the renal filter and consequently jaundice associated with an excess of this type of bilirubin is referred to as choloric jaundice.

From the liver the bile flows down the hepatic and common bile ducts to reach the sphincter of Oddi. This sphincter, innervated by the autonomic nervous system, is in a state of tonic contraction between meals, so that the bile is forced back into the gall bladder where it is concentrated about 10 times by the reabsorption of water and salts. The average pressure in the common bile duct during ordinary tonic contraction of the sphincter is about 100-150 mm. of water, but the sphincter can withstand a pressure of 675 mm. of water without breaking or relaxing. Morphine increases spasm of the sphincter of Oddi by acting directly on its smooth muscle, so that intraductal pressure may rise to 200-250 mm. of water. Consequently morphine is contra-indicated in biliary colic. Gastric hyperacidity also tends to increase sphincteric spasm, hence the relief sometimes obtained in biliary colic by sodium bicarbonate.

During meals, foods such as egg-yolk, fats, magnesium sulphate (carbohydrates have no effect), passing into the duodenum, release a hormone, cholecystokinin, from the upper intestinal tract. This hormone is a powerful cholagogue and causes sphincteric relaxation. Drugs such as amyl nitrite and nitroglycerine also produce relaxation of the sphincter.

When the sphincter of Oddi opens and bile enters the intestine, bilirubin II is converted to urobilinogen by the action of intestinal bacteria. Urobilinogen, a substance of tremendous importance from a diagnostic viewpoint is disposed of as follows:

(a) Part is excreted in the stool as stercobilinogen which is responsible for the brown color of the stool.

(b) Part is absorbed into the circulation to be carried to the liver where it is again excreted in the bile.

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(c) Part goes through the liver to the general circulation and is excreted by the kidney as urobilinogen which is ordinarily colorless. When urine is exposed to air the urobilinogen combines with oxygen to form the dark-colored urobilin.

A very important constituent of the bile is the bile salts—sodium and potassium taurocholate and glycocholate. These salts are important in fat digestion and act by reducing the surface tension of the large fat globules causing them to split into finer ones which may be readily digested by pancreatic lipase.

Hemolytic or Retention Jaundice

In hemolytic jaundice we have the same physiologic processes as normal, but to an exaggerated degree. No matter what the cause, there are more red cells destroyed than under normal conditions. Consequently there is an over-production of bilirubin-globin or bilirubin I. The liver cells cannot possibly excrete bilirubin I as fast as it is formed, so that it is retained in the blood stream in amounts much greater than normal.

Hemolytic jaundice is characterized by the following findings:

(1) An increase in serum bilirubin values and in the icterus index. Latent or subclinical jaundice is present if the icterus index lies between 7 and 17 units, but when it rises above 17 units a discoloration of the sclerae and skin takes place. With hemolytic jaundice the icterus index may climb to 50 or 75 units but it seldom exceeds 100.

(2) The Van den Bergh reaction is indirect, indicating an excess of bilirubin-globin or bilirubin I.

(3) An increase in the amount of urobilinogen in the urine and stercobilinogen in the stool.

(4) Acholuria, because bilirubin-globin cannot pass the renal filter.

(5) Bile thrombi—because of the greatly increased amount of bilirubin excreted by the liver, the bilirubin occasionally gets so concentrated in the bile canaliculi that concretions form. These concretions may form a framework for the formation of biliary calculi, so that hemolytic jaundice is sometimes complicated by a superimposed obstructive element.

(6) No itching—because bile salts are not increased in amount in the blood.

The only type of hemolytic jaundice which is a surgical disease, is the so-called congenital hemolytic jaundice. In this disease the red cells are spherical in shape and extremely fragile so that they fall easy prey to the reticulo-endothelial cells of the spleen—hence the splenomegaly and anemia. Here splenectomy is sometimes curative.

Classification of Hemolytic or Retention Jaundice

Arranged according to Known or Supposed Aetiology¹.

1. Abnormality of the Red Cells

Familial acholuric jaundice..... Microspherocytosis
Sickle cell anaemia..... Sickling trait
Nocturnal haemoglobinuria..... pH factor

2. Haemolysins

Transfusion incompatibility..... Iso-antibodies
Erythroblastosis foetalis..... Rh. factor
Paroxysmal haemoglobinuria..... "Cold lysins"
Severe burns..... Protein cleavage products
Bacterial infections..... Haemolytic toxins
Snake bite..... Cobra venom
Physiological jaundice of the newborn.

3. Parasitic Infection of Red Cells

Malarial anaemia..... Plasmodium sp.

4. Poisons Exerting Lytic or Other Action on Red Cells

Lead; phenylhydrazine; arsenic.

5. Hypersensitivity to Drugs

Sulphonamides: Thiuracil.

6. Cause Unknown But Associated With Known

Predisposing Factors

Symptomatic haemolytic anaemias..... Hodgkin's; Carcinoma
March haemoglobinuria..... Postural defect

7. Cause Completely Unknown

Acute haemolytic anaemia..... Type Lederer
Subacute and chronic haemolytic anaemias,
Cooley's anaemia.

Obstructive or Regurgitation Jaundice

In contrast to hemolytic jaundice, there is no increase in the rate of red cell destruction in obstructive jaundice. Obstructive jaundice is encountered when there is some interference with the free flow of bile from the liver cells down the duct system to the duodenum. Bile accumulates behind the obstructing lesion and the intraductal pressure gradually rises. For the first day or two the gall bladder concentrates and stores the excess bile, relieving the strain, but eventually the intraductal pressure increases so much that the intrahepatic canaliculi become distended and the constituents of the bile are forced back into the general circulation.

Obstructive jaundice is characterized by the following findings:

(1) An increase in the serum bilirubin values and in the icterus index. As a general rule the icterus index reaches much higher values in obstructive jaundice than in hemolytic jaundice.

(2) The Van den Bergh reaction is direct, indicating the presence of sodium bilirubinate or bilirubin II in the circulation.

(3) A decrease or absence of urobilinogen in the urine. In complete obstruction, where no bile enters the duodenum, there can be no urobilinogen reaching the kidneys and consequently there is complete absence of urobilinogen from the urine. In partial obstruction, where occasional spurts of

bile do enter the duodenum, urobilinogen may be found in the urine in small amounts.

(4) A decrease or absence of stercobilinogen from the stool. Thus the normal brown color of the stool is lost and the so-called pale clay-colored stools are passed. Because bile salts are also prevented from reaching the intestine, large amounts of unsplit fat are found in the stool.

(5) Choloria, because the bilirubin present in the circulation is sodium bilirubinate or bilirubin II which can pass the renal filter.

(6) Itching of the skin is present because bile salts are forced back into the circulation. Drowsiness, mental torpor and the slow pulse found in obstructive jaundice are also said to be caused by the bile salts in the circulation.

Classification of Obstructive or Regurgitation Jaundice

1. Calculous.

2. Stricture.

(a) Operative.

(b) Inflammatory.

(c) Dyskinesia.

(d) Congenital.

(1) Total absence of duct.

(2) Atresia of duct.

(3) Cystic dilatation of duct.

3. Malignancy:

(a) Carcinoma of pancreas 33 1/3%.

(b) Metastatic carcinoma of liver 25%.

(c) Primary carcinoma of liver 11%.

(1) Hepatoma.

(2) Cholangioma.

(d) Carcinoma of bile ducts 11%.

(e) Carcinoma of gall bladder 8%.

(f) Carcinoma of ampulla of Vater 5%.

Once the diagnosis of obstructive jaundice is made, it is desirable, if possible, to determine the cause of the obstruction. Obstruction due to calculous is generally incomplete. Consequently the icterus index often shows a daily fluctuation (e.g. 20, 40, 30, 25, 40, etc.). Since some bile enters the intestine, urobilinogen may be found in the urine and stercobilinogen in the stools in very small amounts. Obstruction due to malignancy is usually complete. Consequently the icterus index shows a progressive increase (e.g. 20, 30, 40, 50, 60, etc.). Since no bile enters the intestine, urobilinogen is completely absent from the urine and stercobilinogen from the stools. Obstruction due to stone is usually, but not always, associated with pain, whereas obstruction due to malignancy is usually, but not always, painless. Courvoisier's Law states that in obstruction due to malignancy the gall bladder is distended and often palpable, whereas in obstruction due to stone the gall bladder remains small and contracted. The reason for this is that when stones are present there is

already a cholecystitis, the wall of the gall bladder is thickened, so that it cannot be greatly distended. This law holds true in approximately 70% of cases.

Lahey claims that he can differentiate calculous from malignant obstruction in 95% of cases by duodenal aspiration and examination of the sediment. In calculous obstruction one retrieves cholesterol crystals and calcium bilirubin pigment, while in malignancy where obstruction is complete there is total absence of crystals or pigment. Obstructive jaundice due to carcinoma of the Ampulla of Vater may often be suspected if occult blood is found in the stools. When obstructive jaundice has been present for some time, on aspiration of the common duct one finds a whitish mucoid substance in place of the normal greenish-brown bile. This is the so-called "white bile." This "white bile" is actually a secretion from the mucous glands of the duct system which can secrete until the intraductal pressure rises to 300 mm. of water, whereas the liver cells stop excreting true bile long before this pressure is reached. The finding of "white bile" indicates very severe liver damage, and is a warning that the pressure must be relieved with as little surgical manipulation as possible.

Hepato-Cellular or Toxi-Infective Jaundice

This type of jaundice is due to some poison, chemical or bacterial, which injures the liver cells. The damaged liver cells cannot convert bilirubin I into bilirubin II, resulting in retention jaundice, while the swollen and oedematous cells obstruct the bile canaliculi, resulting in regurgitation jaundice. Any conceivable combination of retention and regurgitation jaundice may occur, and this accounts for the extreme difficulty in diagnosis. The important problem is to differentiate hepato-cellular jaundice, a medical disease, from such surgical diseases as painless extra-hepatic jaundice due to a silent stone, to carcinoma of the head of the pancreas, or to chronic pancreatitis.

The following types of jaundice comprise the toxi-infective group:

(1) Jaundice due to hepato-toxic drugs—gold, chloroform, phosphorus, carbon tetrachloride.

(2) Jaundice due to systemic infections—e.g. lobar pneumonia.

(3) Infectious hepatitis or catarrhal jaundice.

This is the commonest type of jaundice encountered in general practice and may occur in epidemic form. It is thought to be caused by a specific filtrable virus which is spread by the oral route. MacCallum fed human volunteers with fecal material obtained from patients with infectious hepatitis and reproduced the disease. One attack is said to confer permanent immunity, but second attacks have been reported.

Clinically, the disease begins with a pre-icteric phase of 3-5 days, characterized by anorexia,

malaise, headache and upper abdominal discomfort. In the pre-icteric phase two tests may be found of value—the histamine wheal test and the methylene blue test. In the former $\frac{1}{4}$ cc. of histamine is injected into the skin of the forearm—normally a wheal with hyperemic edges and a white centre develops, but in pre-icteric hepatitis the edge of the wheal is yellow and in $\frac{1}{2}$ to 1 minute the whole wheal turns yellow. In the latter test 2% aqueous methylene blue is added drop by drop to 5 cc. of urine—if positive an intense green color develops, and if negative a light blue color after 1-2 drops. Other clinical features include an enlarged tender liver, lymphadenopathy, lassitude, fatigue, mental depression and a leucopenia with a relative lymphocytosis.

(4) Homologous Serum Jaundice.

Here the clinical picture closely resembles that of infectious hepatitis. It is caused by the transmission of latent hepatitis from carriers where incompletely sterilized syringes and needles are used. Thus the virus may be injected with various vaccines or sera or during blood transfusions or in the course of removing blood from a patient for laboratory tests. The incubation period of the disease varies from 20 to 120 days. Occasionally patients operated on for biliary tract disease may develop jaundice two or three months post-operatively and stricture, cholangitis or residual stone suspected, but homologous serum jaundice from previous blood or plasma transfusions may be the actual cause.

(5) Cirrhosis of the Liver.

No single etiologic agent can be considered the cause of cirrhosis, but alcoholism and dietary deficiency seem to be predisposing factors. The process is one of degeneration and death of liver cells with subsequent proliferation of connective tissue, so that the normal architecture of the liver lobule is destroyed. Jaundice, usually subclinical, is present in $\frac{2}{3}$ of the cases. Other clinical features are varicosities where portal and systemic circulations meet (e.g. oesophageal varices, hemorrhoids, caput medusae), spider naevi (bright red lesion with central point of pin-head size from which radiate fine branches about one cm. long), palmar erythema or flush, "liver palms" (symmetrical dilatation of arterioles and capillaries over thenar and hypothenar eminences and finger tips), and gynecomastia because the cirrhotic liver cannot inactivate estrogens.

(6) Weil's Disease.

This disease is caused by the spirochaeta *icterohaemorrhagiae*. It usually occurs in troops on active service and in workers in mines, sewers and abattoirs, where dampness of the soil and close association with rats prevail. The rat seems to act as a reservoir of infection, excreting large numbers of the spirochaetes in the urine. The disease

usually lasts 3 weeks. During the first week the spirilla are present in the blood, in the second week they appear in the urine and disappear from the blood and in the third week specific agglutination and lysins appear. The disease may be diagnosed by examining the urine by the dark-field method or by the intraperitoneal injection into a guinea-pig of the blood in the first week or the urine in the second week.

Differential Diagnosis of Jaundice

In a large percentage of jaundiced patients the differential diagnosis may be extremely difficult and every conceivable clue must be used if correct diagnosis is to be made. The following is a plan which may be adopted in the investigation of a case of jaundice:

(1) History—alcoholism (cirrhosis); occupation in mines, abattoirs (Weil's Disease), in ammunition (hepato-cellular from trinitrotoluene), previous attack in childhood (infectious hepatitis); attacks of colic (stone); painless attacks (cirrhosis); previous treatment with arsenic, gold, sulphonamides (hepato-cellular); transfusions (homologous serum jaundice); previous operations (stricture or stone); pruritis (obstructive jaundice).

(2) Examination: Age—neonatal (physiological or erythroblastosis); childhood (catarrhal); middle and old age (stone or carcinoma); sex—male (cirrhosis, carcinoma of pancreas, primary carcinoma of liver, Weil's Disease); female—(stone, carcinoma); spider naevi, "liver palms" (cirrhosis); Courvoisier's Law (stone or carcinoma); pleuro-friction rub (neoplasm, abscess, syphilis).

(3) Laboratory investigation.

(a) Blood—complete blood count and Wassermann.

Icterus index or serum bilirubin.
Van den Bergh reaction.

(b) Duodenal contents—bilirubin, cholesterol, blood.

(c) Urine—urobilinogen, bilirubin.

(d) Stools—stercobilinogen, split and non-split fats.

(e) Liver function tests.

(4) Roentgenological investigation—gall bladder visualization; demonstration of oesophageal varices.

(5) Exploratory operation.

Liver Function Test

The liver is always involved to a certain extent in jaundice. The functions of the liver are numerous and this accounts for the number of tests described. Many of these tests are difficult to carry out and costly to the patient. When you bear in mind that jaundice is a progressive condition, and that certain tests must be repeated frequently, either for the purpose of diagnosis or prognosis, one must choose those tests which will

yield the most information. Your selection will depend on whether you are interested in differential diagnosis or in estimating liver reserve. Sometimes you may find one single function disturbed which, if interpreted properly, may give you a clue as to what is going on. On the other hand, one must bear in mind that the reserve power of the liver is so great that impairment of liver function can only be demonstrated after extensive liver damage. 7/10ths of the liver may be destroyed and 3/10ths carries on so well that all tests are normal. This explains the hepato-renal syndrome or liver death where, after a simple cholecystectomy or exploration of the common bile duct, the apparently normal patient dies from hyperpyrexia, anuria, or does well for 3 or 4 days and then slips away quietly and this, in spite of all tests being normal. We have no way of accurately gauging liver reserve. However, if any one of the tests shows depressed liver function, that alone should be a valuable warning to be on guard and make definitely certain that the disturbance is corrected.

Liver tests are classified according to interference with liver function.

I. Protein Metabolism Tests

(a) Quick's Test: Plasma Prothrombin is manufactured and stored in the liver and is a link in the chain of blood clotting. To test for plasma prothrombin you assay its capacity to form thrombin. To do this we measure the clotting time of oxalated plasma after the addition of an excess of thromboplastin and an optimal amount of calcium. Since fibrinogen is normal the clotting time which follows represents the amount of prothrombin present. Normal plasma will clot in 12-15 seconds. Clotting in 20 seconds or longer is abnormal. Prothrombin is manufactured and stored in the liver and depends on four factors: an extrinsic factor—fat soluble Vit. K., and intrinsic factor—bile salts (necessary for absorption of Vit. K., a healthy intestinal epithelium capable of absorbing Vit. K. and a healthy liver which can manufacture and store prothrombin. A low level of prothrombin represents reduced liver function only, but a clue to the prognosis can only be arrived at by the response of the patient to Vit. K. therapy, e.g. three patients in a ward all having a prothrombin time of 60%. No. (1) Early stone obstruction—give Vit. K. and it rises rapidly and progressively 60, 65, 70, in a few days. No. (2) Late obstruction—will rise much more slowly—perhaps after many days. No. (3) Acute yellow atrophy—no rise at all. In other words where jaundice is due to extra-hepatic causes there is a ready response, whereas when liver damage becomes marked there is no response at all.

Two other important facts must be accepted—the critical bleeding level occurs when the pro-

thrombin time falls to 25% of normal, and operative procedures depress the plasma prothrombin by 25%. Therefore the minimum theoretical level before operation can be attempted is 50%, but actually an operation should never be performed until the prothrombin level reaches at least 65% of normal. Because the liver is damaged it cannot store prothrombin, and therefore Vit. K. therapy should be continued for at least four days post-operatively. Synthetic Vit. K., Menandione may be administered by mouth and will readily be absorbed since its absorption is not dependent on bile salts.

(b) Cephalin, Cholesterol Flocculation Test: When a liver cell becomes necrosed or autolyzed it releases something into the blood which alters the globulin in the serum. When this serum is mixed with a colloidal suspension of cephalin—cholesterol complex, there is a flocculation. The degree of flocculation indicates the amount of liver damage, plus 1, 2, 3, or 4. It is an extremely sensitive and reliable test of liver cell damage only, but not of liver function or reserve, e.g. in a case which I had of malignant obstruction at the porta hepatis, the prothrombin time was 33% of normal, while the Cephalin Flocculation test was normal. In hepatitis the prothrombin time may be normal, while the cephalin flocculation test may be 4 plus. It is therefore an index of the amount of disease in the liver, and is of value in prognosis and in the diagnosis of hepatitis, cirrhosis, etc. Persistent high values indicate a poor prognosis while a drop means improvement. The thymol turbidity test is based on the same principle.

(c) Takata Ara Test: This is a flocculation test with precipitation of globulins and is correlated in some way with changes in the albumin-globulin ratio. It is positive in a very high percentage of patients with advanced liver diseases and particularly cirrhosis, but is also positive in a wide variety of other diseases, e.g. pulmonary tuberculosis and nephritis. It can be carried out on ascitic fluid. Normally—reaction negative.

(d) Plasma Proteins: Estimation of plasma proteins is extremely important in all cases of chronic gastro-intestinal disease but especially in liver disease. The total plasma protein is usually 6-7 gms. with an albumin-globulin ratio of 3-2. In liver disease there is a reduction chiefly of the albumin fraction with an increase of the globulin resulting in a reversed albumin-globulin ratio. Consequently there is a lowering of the osmotic pressure of the blood resulting in oedema of the lungs with bronchitis or pneumonia, and oedema of the operation wound which may cause evisceration and poor healing.

(e) Crystals of Leucine and Tyrosine may be found in the urine in acute hepatic necrosis.

II. Carbohydrate Metabolism

(a) Galactose Tolerance Test: Based on the fact that the liver alone has the exclusive property of converting galactose into glycogen and no other tissues can use it. It is performed like the glucose tolerance test. Give 40 gms. of galactose by mouth. The ingested sugar goes to the liver and becomes converted to glycogen. That which the liver fails to store passes into the general circulation and is excreted in the urine. Unlike glucose there appears to be no renal threshold for galactose and therefore the amount of galactose found in the urine should theoretically afford an index of liver function. The test is difficult to perform, expensive, and not very sensitive. Sometimes it is used to differentiate obstructive from hepatic jaundice, e.g. very slightly positive in obstructive jaundice and markedly positive in hepatitis.

(b) Lactic Acid Test: Very rarely used.

III. Estimating Excretory Function

(a) Bromsulphthalein Test. This dye is non-toxic and is excreted solely by the liver. A measured amount is given intravenously and the amount remaining in the circulation at the end of 30 minutes is estimated. More than 10% of the dye remaining in the blood stream indicates liver damage. It is a sensitive and most valuable test in the absence of jaundice; since in obstructive jaundice it regurgitates into the blood stream and affects colorimetric reading.

(b) Bilirubin Excretion Test: The liver has naturally a tremendous power of excreting bilirubin. Inject a known amount of bilirubin into the blood and a retention of 5-6% after four hours (which is the upper limit of normal) indicates residual hepatic disease. This is a valuable test in cirrhosis of the liver after an attack of jaundice and in the convalescent stage of acute hepatitis.

IV. Fat Metabolism

Relationship of cholesterol ester to total cholesterol has been thoroughly studied. It has been proven experimentally that esterification of cholesterol takes place in the liver. Therefore a decrease of cholesterol ester means a decrease in liver function. Total blood cholesterol content of normal blood plasma is 150-200 mg. per 100 cc. of blood. Of this approximately 50% is in the form of cholesterol ester. Ratio of the ester to total blood cholesterol is roughly 50%. Other diseases affect esterification and therefore it is not strictly liver function test. Reduction of cholesterol is an indication of severity of liver damage and not of value in differential diagnosis. Since cholesterol is excreted in bile, in obstructive jaundice total cholesterol may rise to 1,500 mg. and parallels the bilirubinemia, whereas in hepatitis or liver necrosis both ester and total cholesterol are depressed.

Therefore it is the ratio of esters to total cholesterol which is important in the analysis.

V. Detoxifying Property

(a) Hippuric Acid Synthesis Test: Glycine is formed entirely by the liver and is not supplied by food. It does not store glycine but produces maximum hourly supply. Therefore, the ability of the liver to produce glycine is a good test of liver function. Hippuric acid test for hepatic function is based on the ability of the liver to detoxify benzoic acid. Glycine unites with benzoic acid to form hippuric acid and the rate of formation depends to a large extent on the speed at which glycine can be furnished. Give a measured amount of sodium benzoate by mouth and estimate the total hippuric acid in the urine after four hours. Kidneys must be normal in this test.

(b) Retention of Non-Protein Nitrogen: The liver detoxifies the end products of protein metabolism and converts them into urea. The test for determination of non-protein nitrogen in blood is a simple procedure. This is of important prognostic value in jaundice. Non-protein nitrogen increases in acute hepatitis and cirrhosis when liver damage increases and jaundice deepens. In surgical jaundice, benign or malignant obstruction, rise of non-protein nitrogen usually indicates secondary involvement of liver parenchyma and may be an indication for urgent surgical relief of obstruction.

(c) Phosphatase Test: This enzyme is formed in the skeletal system and perhaps partly in the liver and is excreted in the liver bile along with cholesterol, bile salts, etc. Any obstruction to the flow of bile would therefore tend to raise the blood phosphatase. Two methods are generally used in estimating content of blood and expressed as Bodansky units—normal 1-4 units per 100 cc's. of blood or King and Armstrong—3-13 units. Very high levels of phosphatase is common in obstructive jaundice—usually above 10 Bodansky units. Some say that if it is under 10 units there is no obstruction. In late obstructive cases when the liver becomes damaged, the icterus index rises while phosphatase begins to drop. In hepatitis it is usually under 10 units and in severe acute yellow atrophy may drop below normal. In late stages of hepatitis where obstruction increases it may rise above 20 Bodansky units. In haemolytic jaundice it is normal. It is therefore important to know when in the course of the disease the test is done because it fluctuates. If one repeats the test weekly one can better estimate the progress of the disease.

Surgical Aspects of Jaundice

In the patient with jaundice pre-operative preparation is of paramount importance. Hypoproteinemia and dehydration must be

brought for and corrected. Vitamin K should be administered parenterally until the prothrombin level is at least 65% of normal. Ascorbic acid and the B complex vitamins should also be administered in liberal amounts.

The anaesthetic to be used depends on individual preference. We personally use sodium pentothal followed by cyclopropane and supplemented by curare. A good principle is to start the administration of fluids or blood intravenously before the skin incision is made. The incision may be a right paramedian, Kocher or transverse depending on the stature of the patient or the individual preference of the surgeon. On entering the peritoneal cavity, a general survey of the abdomen should first be made. Then attention is directed to the gall bladder and duct system. Never remove the gall bladder before palpating the head of the pancreas, since a carcinoma of the head of the pancreas or a chronic pancreatitis may be found, and there will be no gall bladder left with which to do a cholecystoenterostomy. If an acute obstructive cholecystitis is found the procedure of choice is cholecystectomy. If oedema and adhesions make cholecystectomy hazardous, or if the patient is old and in poor general condition, cholecystostomy may be done.

Our next consideration is under what circumstances is exploration of the common bile duct indicated. The indications briefly are a history of jaundice with colic, the finding of many small stones or gravel in the gall bladder, the finding of a dilated common bile duct or the palpation of a stone in it, and the presence of induration in the head of the pancreas. To explore the common duct, two stay sutures are placed in the wall of the duct just below the entrance of the cystic duct. The duct is then aspirated with a syringe and needle. If "white bile" is found liver damage is severe, a T-tube is inserted and decompression carried out for two or three weeks, after which time an elective operation may be done when the patient is in better condition. If no "white bile" is present a small incision is made and the duct irrigated with saline. Courvoisier forceps are introduced and passed upwards and downwards in an attempt to remove all stones. A probe is then passed through the sphincter of Oddi to prove its patency. Dilatation of the sphincter is a harmful procedure since it results in reactionary edema and delayed fibrosis. The common bile duct is now drained either with a catheter or a T-tube. I personally prefer a catheter in early cases and a T-tube in late cases where drainage for several weeks or months is required. A Penrose drain is next placed in Morrison's Pouch. Never introduce sulphonamides into the peritoneal cavity in the presence of jaundice as it has been shown that

portal concentration is very high and further liver cell damage results.

No surgeon, irrespective of his experience and ability, is sure that all the stones have been removed at any operation. Small stones may roll down from the liver radicles later. Bits of blood clot, biliary debris or inspissated mud may act as a nucleus for future stone formation. For this reason immediate post-operative care in the form of a biliary flush as recommended by Best.

This consists in giving dehydrocholic acid (procholon or decholon) which is a marked choleretic and doubles the flow of bile, tending to flush out the liver³. One tablet is given three times daily for the first three days. An ounce of olive oil may be given at bedtime and a tablet of nitroglycerine under the tongue in the mornings. This tends to relax the sphincter. On the 10th post-operative day the tube is clamped for 48 hours. Pain or discomfort suggests further obstruction, whereas no pain indicates good emptying. However, one cannot be sure that this is so, and for that reason a T-tube must never be removed without first doing a cholangiogram, since a silent stone may be left behind. If so it may mean a further, more difficult operation or the patient may be left with repeated colic, jaundice or a biliary fistula.

A normal cholangiogram must be free of negative shadows and must empty in 10-20 minutes into the duodenum. If there is undue delay in emptying it would indicate incomplete obstruction due either to spasm or ball-valve stone obstruction. If a negative shadow is present that is evidence of a stone left behind. This has been treated successfully in a good percentage of cases by one of the following two methods: Instil alcohol-ether solution (2 cc. alcohol and 3 cc. ether) and clamp the catheter⁴. This does not dissolve the stone as was previously supposed, but distends the biliary system, stimulating smooth muscle wall to contract. At the same time administer an ampoule of amyl nitrite which dilates the sphincter. I have treated 2 cases successfully by this method. Recently solution G has been used as in urinary calculus: (citric acid monohydrated) 32.25, magnesium oxide (anhydrous) 3.84, calcium carbonate (anhydrous) 4.37, aqua qs. ad. 100 ccs. This solution is run through a Murphy drip at a rate of 30 drops per minute. An occasional cramp-like pain is felt. Repeat every 2-3 days. In vitro this solution will not dissolve cholesterol but it probably irritates the mucosa and causes muscular contractions⁵. In addition one can irrigate the common bile duct with sterile saline solution daily and instil warm olive oil. Give nitroglycerine and clamp the tube after each irrigation.

In long standing obstructive jaundice which produce hydrohepatosis or pyohepatosis, especially

with Charcot's fever and chills, the biliary radicles are dilated and distended with pus, giving a picture similar to bronchiectasis. These cases must be drained for weeks or months even though no obstruction is evident, until a normal cholangiogram visualizes the entire biliary tree⁸.

In malignant obstruction with intense jaundice and intolerable itching one can exteriorize a lobe of the liver, puncture a hole in the liver and produce a biliary fistula. Bile does not irritate the skin and this procedure relieves the itching. If epithelialization occurs, incise the liver (external hepatectomy). This is a valuable palliative procedure.

Summary

One can easily appreciate how vast a field of medicine the general subject of jaundice entails.

Blood Grouping and Rh Typing for Rural Areas

Bruce Chown, M.D.

Since our offer last fall, blood specimens from over 3,000 potential blood donors in rural Manitoba have been grouped and Rh typed in the laboratories of the Children's Hospital. This is helpful, but it does not solve the transfusion problem for the rural physician. Any doctor wishing tests on potential donors need only arrange, or have a community group arrange, to have donors canvassed and then send us blood specimens from them, along with a nominal roll in duplicate. The Keidel tubes can be obtained from the Department of Health, Sherbrook and Portage. A label, with the name and address running lengthwise on, **not around**, the tube should, if possible, be typed, and then affixed. The nominal roll should, if possible, be typed. If you expect to send us more than 100 bloods at a time, let us know ahead of time what day we may expect them. As yet we have no donor cards, but these we hope to have later.

We offer, too, routine blood grouping and Rh testing of pregnancy bloods. For this purpose write us for our Red Labels. You stick one of these on a pregnancy blood and send it, as heretofore, to the Provincial Laboratory. From them you will get a Wassermann report and from us a report of the patient's blood group and Rh type. Further, all Rh negative bloods are tested for Rh antibodies,

In the brief space of this paper the writer has attempted only a review of those factors that are of cardinal importance in the proper evaluation and management of the jaundiced patient. An attempt has been made to describe the physiology and pathologic physiology in simple and practical way so that it may be of benefit to those who only occasionally are called upon to diagnose and treat a case of jaundice.

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and if these are found this too is reported to you. This service can prevent the transfusion of Rh negative women with incompatible blood. Remember the golden rule, "Never transfuse a woman with her husband's blood."

Send any inquiries to:

The Blood Grouping and Rh Testing Laboratory
Children's Hospital,
Winnipeg, Man.

There is no charge for this service. The service costs are now paid for by the Provincial Department of Health and Public Welfare. Research of the Rh factor is supported by grants from the National Research Council, Ottawa; the Blood Grouping Laboratory of the Children's Hospital, Boston, (Dr. Louis K. Diamond, Director); and Mead Johnson and Company of Canada.

Summer Diarrhea in Babies

Casce (calcium caseinate), which is almost wholly a combination of protein and calcium, offers a quick and effective method of treating all types of diarrhea, both in bottle-fed and breast-fed infants. For the former, the carbohydrate is temporarily omitted from the 24-hour formula and replaced with 4 packed level teaspoons of Casce. Within a day or two the diarrhea will usually be arrested, and carbohydrate in the form of Dextri-Maltose may safely be added to the formula and the Casce gradually eliminated. One to three packed level teaspoons of a thin paste of Casce and water, given before each nursing, is well indicated for loose stools in breast-fed babies. For further information, write to Mead Johnson and Company, Evansville 21, Indiana.

CANCER

Edited by D. W. Penner, M.D.

Reported Cancer Deaths in Manitoba 1947

R. F. Friesen, M.D.

The Manitoba Cancer Relief and Research Institute

For years the reported cancer death rate has been about 60% higher in Greater Winnipeg than in the rest of Manitoba. The purpose of this paper is to analyze the figures for 1947 and to discuss the reasons for the apparent difference in mortality from cancer in urban and rural areas.

The source of the data is the cause of death as given on the official death certificates filed in the province during the year. It might be worth pointing out that these are deaths reported in 1947, and not necessarily occurring during that year. Thus, some of the deaths reported in 1947 occurred during the latter part of 1946; on the other hand, some deaths occurring late in 1947 would not be reported until 1948 and, therefore, are not included in this paper.

In any statistical analysis of this nature, the question of completeness and accuracy of reporting arises. Because all deaths must be reported before burial, it can be assumed that reporting is complete. The accuracy of the diagnosis of the cause of death cannot be assessed so easily and will be discussed more fully later.

Table 1 shows the number of deaths reported due to cancer in Manitoba during 1947 classified according to the primary sites.

Table I

Site	Male	Female	Total	Per cent
Stomach	92	63	155	17%
Rectum	22	17	39	4%
Other Digestive Organs	116	111	227	25%
Buccal Cavity	18	4	22	2.5%
Respiratory Organs	76	18	94	10%
Urinary Organs	41	14	55	6.5%
Breast	—	70	70	7.5%
Cervix and Uterus	—	64	64	7%
Other Female Organs	—	30	30	3.5%
Male Genital Organs	69	—	69	7.5%
Skin	13	8	21	2%
Brain and Nervous System	12	10	22	2%
Bone	2	4	6	.5%
Hodgkin's Disease	10	5	15	1.5%
Leukemia	5	1	6	.5%
Unspecified Sites	23	12	35	3%
Total	499	431	930	100%

For the sake of brevity the figures by age groups are not given here. They show the usual higher incidence in the older age groups. Only 20 of the 930 deaths occurred in patients under 25 years of age. It is noteworthy, however, that most of these deaths occurred in sites which accounted for relatively few deaths in the population as a whole. Thus, although cancer of the brain and nervous system was given as the cause of death in only 22 instances, 5 of these were

under 25 years of age. Out of 15 deaths from Hodgkins, 3 were in this low age group. Leukemias and malignant tumors of bone each accounted for a total of 6 deaths, but in each case 2 of these 6 were under the age of 25. Therefore, doctors should watch for these types of cancer in their younger patients in spite of the correctness of the popular belief that cancer in general is a disease of the middle and later age groups.

For purposes of comparison, reported Cancer Death Rates per 100,000 population are more useful than the actual number of cases given above. The latest figures available for the population of Manitoba are those of the 1946 census. According to these, there were 676,099 people in Manitoba of whom 295,317 lived in the large urban area popularly known as Greater Winnipeg, and 380,782 in what we call rural Manitoba, but including smaller urban areas, notably Brandon. Table 2 shows the number of cancer deaths reported per 100,000 population in these areas, according to the permanent residence of the patient.

Table II

Site	Urban	Rural	Province
Stomach	29.8	17.6	22.9
Rectum	7.1	4.7	5.8
Other Digestive Organs	41.0	27.8	33.6
Buccal Cavity	3.4	3.1	3.2
Respiratory Organs	18.6	10.2	13.9
Urinary Organs	12.5	4.7	8.1
Breast	29.8	13.6	20.8
Cervix and Uterus	27.2	12.6	19.0
Other Female Organs	10.2	7.8	8.8
Male Genital Organs	27.2	14.8	20.4
Skin	2.7	3.4	3.1
Brain and Nervous System	4.7	2.1	3.2
Bone	0.0	1.6	.9
Hodgkins	2.7	1.9	2.2
Leukemia	.7	1.0	.9
Unspecified Sites	6.8	3.9	5.2
All Sites Combined	177.3	106.8	137.6

Table 2 shows that the reported death rates are considerably higher for the urban than for the rural areas. This might be due to a difference in the true death rate or to a difference in the error in reporting from the two areas. Let us first consider the possibility that there is a difference in the true death rate.

One factor which markedly affects the true cancer death rate is the age distribution of the population under consideration. The usual method of correcting for this factor is to apply the rates by 5-year age groups to any standard population. Unfortunately, the data necessary for this calculation are not readily available, and even if they were, the figures would be so small that the errors involved in such calculations would be disproportionately large. This same question was dealt with at some length in the Annual Report of the Manitoba Cancer Relief and Research Institute for

1946. At that time, it was shown that in the range between 25 and 70 years there was no great discrepancy in the age distribution of the population of the two areas under consideration. Nevertheless, in that report the reported death rate in this range showed the same disproportion as is found in this analysis. Therefore, it is probably correct to assume that the higher rural rates cannot be explained satisfactorily on the basis of a difference in the age distribution of the population.

Too little is known about occupational hazards to evaluate this factor accurately. Because of greater exposure to sun and wind, farmers should be more subject to cancer of the skin and lip. To offset this, city workers are probably exposed to more chemical carcinogens. Because occupational hazards play a part in such a small proportion of cases, this factor cannot be held responsible for any great discrepancy in the cancer death rates in different areas.

Differences in habits of living might be partly responsible, but again, until we know more about the causes of cancer, it is futile to speculate along these lines.

While the above observations offer considerable evidence to show that the true cancer death rate is no higher in Greater Winnipeg than in the rural areas, they also indicate how difficult it would be to establish scientific proof of this. Let us now look into the possibility that the difference is due to errors in reporting in the form of under-diagnosis on the part of the country practitioners.

During the past few years much has been said regarding an alleged maldistribution of the doctors in the province and the relative lack of medical services available to the residents of rural areas. If this is true, it would tend to result in more errors in the reported causes of death.

The average amount of training of the rural doctor is not as extensive as that of the urban one because of the relatively larger proportion of specialists practising in Greater Winnipeg. Comparing men with equal training, those located in the country have more difficulty in keeping up to date. Participation in refresher courses is more difficult for them because it is generally more of a hardship to arrange for the care of their practice while they are away. Even attendance at scientific meetings is more difficult because of the usual necessity for travelling a considerable distance.

In general, rural residents are less inclined to see their physician about what they consider to be minor ailments. This is partly because they are not so well informed, and partly because the doctor is not so readily available. Because of this the country practitioner may see a greater proportion of cases in the terminal stages when a malignant tumor may be masked by some of its secondary effects.

The diagnosis in many cases of cancer depends upon complicated investigative procedures. These procedures require special equipment and the skill of specialists in many lines. The country practitioner lacks the ready access to these facilities which his city colleague enjoys. The importance of this factor cannot be over-emphasized.

Under the best of conditions, in a considerable proportion of cases, the diagnosis remains uncertain until the time of death. In these cases, the post-mortem examination is invaluable in establishing a correct diagnosis for permanent records. Under existing circumstances, doctors who practise in rural areas cannot obtain this type of help as readily as those who practise in a teaching centre.

The above discussion is by no means intended to cast aspersions on the quality of the work done by the practitioners in rural Manitoba. It is meant instead to point out the effects of some of the disadvantages they have to contend with as compared to their city colleagues. These disadvantages apparently result in more than one out of every three cases of cancer remaining undiagnosed even after death. Because their effect on early diagnosis is likely even greater, these same disadvantages probably result in many preventable cancer deaths.

Summary

1. The number of deaths reported due to cancer of various sites during 1947 in Manitoba is given.
2. The rate per 100,000 population is shown to be 66% higher in Greater Winnipeg than in the rest of Manitoba.
3. This difference is probably due to a higher proportion of cancer remaining undiagnosed because of relative disadvantages on the part of the rural practitioners in the matter of training facilities, and working conditions.

I wish to thank Mrs. M. E. Macdonald for her assistance in compiling the figures used in this paper.

UROLOGY

Renal Tuberculosis*

Harry D. Morse, M.D.**

There is little if anything new in the diagnosis and treatment of renal tuberculosis; except the conflicting opinions regarding unilateral versus bilateral involvement and the question of healing of tuberculosis of the kidney and if so, under what circumstance.

That the general incidence of tuberculosis is decreasing is shown by Public Health statistics. That renal tuberculosis is decreasing is undoubtedly merely a reflection of the general lowered incidence of tuberculosis. Nor do we see so many of the distressing cases with marked bladder involvement due undoubtedly to the earlier recognition of renal tuberculosis.

Route of Invasion

Renal tuberculosis is not a primary condition but is a secondary lesion and it is generally accepted that the renal infection is caused by a tuberculous bacteraemia usually arising from a primary pulmonary lesion which directly invades the blood stream or involvement of the hilar glands may drain the bacilli into the lymphatic ducts and hence to the blood stream. The tissues and the number involved depends upon several factors; the severity of the blood stream invasion; the virulence of the invading organism; and the patient's local as well as general resistance to the disease. Multiple lesions are a manifestation of the severity of the bacteraemia rather than of a spread from one visceral lesion to another.

Excretory Bacilluria

Excretory bacilluria has been a controversial subject for years. In the middle of the 19th century it was held not to occur, but as the century closed, Biedl, Kraus and von Klechi produced research work which convinced the profession that it was possible. In 1920 Lepper, working with the colon bacillus and Dyke, with staphylococci, could not produce bacilluria, and also demonstrated errors in technique of the previous investigators which proved their work to be fallacious.

In 1924 Medlar⁺ and Sasano, working with tubercle bacilli, showed, following the intravenous injection of these organisms, that in every guinea pig which excreted the organisms in the urine a renal lesion could be demonstrated at autopsy. In most cases the lesions were microscopic in size and could only be demonstrated by serial sections.

They also noted that in some instances definite evidence of healing was present.

Helmholtz and his associates in 1925, working with several types of bacteria, confirmed the previous investigators' work, i.e., that bacteria did not appear in the urine until sufficient time had elapsed for definite lesions to appear in the kidneys and these lesions were demonstrated in all cases. It was their opinion that the conclusion of other investigators that normal kidneys could excrete bacteria was based upon errors in technique. The excellent research work of the above authors has established the fact that true excretory bacilluria does not occur, and this is generally accepted on this continent.

Unilateral Renal Tuberculosis Versus Bilateral Renal Tuberculosis

Some of the more radical Urologists state that renal tuberculosis at the onset is always bilateral. As a rule these men are quoting experimental work such as that of Medlar and Sasano or those working with sanatorium cases such as Thomas and his co-workers. Those taking a more conservative view such as Braasch, Bumpus, Mathe, Emmett and others, are dealing with cases which have mostly overcome other tuberculous lesions and are in good condition generally except for the renal tuberculosis. They find about 15% of the cases are bilateral. Consequently the truth is probably midway between these views.

In support of the bilateral involvement and healing Medlar examined the kidneys of 30 patients who died from pulmonary tuberculosis but had no urinary symptoms. He examined the kidneys both macroscopically and microscopically, and made a total of 100,000 serial sections. In 22 cases renal tuberculosis was demonstrated and in all cases both kidneys were involved. He also found definite evidence of healing in the majority of cases and concluded that early tuberculous lesions of the kidney may heal. However, he was examining cases where there was probably at one time or other a severe tuberculous bacteraemia present.

Thomas and his associates, reporting on the healing of renal tuberculosis, from their work in the Glen Lake Sanatorium, state: "During the invasion stage when the earliest lesions are present, renal tuberculosis is usually bilateral." They also state that early lesions become quiescent and a few apparently heal. In 1941 they reported 4 cases they had followed for 5 to 14 years. These cases all showed tubercle bacilli in the urine and had active tuberculous lesions elsewhere, and they all showed pyelographic evidence of the disease. In all cases the tubercle bacilli disappeared from the

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urine. Beach and Schultz also reported spontaneous healing of renal tuberculosis in 8 cases.

In 1930 Bumpus² reported on 175 cases who had the urine from the supposedly normal kidney injected into guinea pigs; in 23 the test was a failure; in 109 negative results were obtained; and in 43 the results were positive. Two of the 43 cases died in hospital and 11 died subsequently. Of the 30 who remain 13 have unquestionable involvement of the remaining kidney; 3 could not be traced, and 14 are well. He further asks: "Do these cases represent technical factors such as the picking up of tubercle bacilli by the catheters from the bladder or lower ureter; or do they represent reflux of urine up the ureter of the good kidney; or do they represent early involvement of the kidney which has subsequently healed?"

In reporting on 1,131 cases of renal tuberculosis in which nephrectomy was performed, Emmett and Kibler³ divided them into four groups. In Group 1 the good kidney was not catheterized and 34% died in 5 years. In Group 2 the good kidney was catheterized and the urine showed 0-3 pus cells to a high power field; 20% died in 5 years. In Group 3 the urine showed 3 to 10 pus cells and 43% died in 5 years. In Group 4, where more than 10 pus cells were found in the urine, 33% were dead in 5 years. They then subdivided Group 2 (the cases where from 0 to 3 leukocytes were found), and Groups A, B, and C. In Group A where the acid fast stains were negative 20% were dead in 5 years and 34% in 10 years. In Group B where guinea pigs were inoculated and found negative and the acid fast stains were negative 13% were dead in 5 years and 27% in 10 years. In Group C where positive guinea pigs or positive acid fast stains were obtained, or both, the death rate was 41% in 5 years and 66% in 10 years. This leaves a 10-year recovery rate of 44% in whom tuberculosis bacilli were found in the urine from the good kidney.

It used to be considered that survival of patients who had bilateral renal tuberculosis for 10 years was exceptional and that the majority died before 5 years. However the paper by Braasch and Sutton¹ on the "Prognosis in Bilateral Renal Tuberculosis" must make us radically change our concepts on life expectancy in these cases. It showed that in 167 cases 58% lived 5 years or more, 26% 10 years or more and 16% of cases 15 years or more.

In analyzing Emmett and Kibler's statistics regarding those recovering where tuberculosis bacilli had been found in the good kidney, Braasch states that too many recovered to permit the hypothesis of spontaneous recovery from active tuberculous involvement of the kidney and he says: "From this study three inferences are possible, (1) The kidney may occasionally recover from tuberculous infection. (2) Positive evidence of disease in the

good kidney, as determined by inoculation of urine into guinea pigs, sometimes is inaccurate and misleading. (3) There is a definite group of patients who live fairly comfortably with chronic renal tuberculosis." In his opinion the apparent recovery in most of these cases was explained by the last two inferences.

I am in the fortunate, or unfortunate position of being in private practice and also acting as urological consultant for the Manitoba Sanatorium Board; consequently I see not only the pure surgical cases of renal tuberculosis but also the cases which might be termed the early or pre-clinical type. This latter group includes patients whose routine urinalysis shows a small number of pus cells and a positive acid fast stain, culture or guinea pig inoculation, but their urological examination, including bi-lateral retrograde pyelogram, shows no evidence of renal involvement. Several such cases have been followed for years during which time the findings have been positive sometimes and at other times, negative but there has been no definite evidence of renal involvement as shown by the amount of pus from either kidney and there has been no pyelographic evidence of disease.

I wish to apologize for the lack of detail in the following group of cases to be reported but as everyone knows it takes time to gather statistical data and receive follow-up reports. It takes longer than four weeks notice. However the data which I accumulated for my own information several years ago and which covers a period of 9 years from 1931-1940 is fairly complete but the data for cases from 1940-1947 is relatively incomplete.

In the sanatorium it has been the custom for every patient to have a complete urinalysis once a month. If pus or blood is found in the urine or the patient complains of urinary symptoms, the urine is repeatedly stained and cultured for tuberculosis bacilli. If the findings are positive or negative and the patient has persistent symptoms a complete urological examination is carried out which, in the doubtful cases includes inoculation of guinea pigs.

In the 9-year period from 1931-1940 there were 76 cases of renal tuberculosis and in the last 5 years there were 89 cases, 47 of which were discarded because complete data was not obtained due to the lack of time, incomplete histories, and incorrect filing. This leaves a total of 118 cases in the last 15 years.

The average age of these 118 cases was 34 years the youngest was 12 years of age and the oldest 65 years; 64 cases had a Nephrectomy done. Fifty-six (47.5%) had associated pulmonary disease, 16 (16%) showed osseous lesions and 26 (22%) showed bilateral renal involvement. This is high, but remember the majority of these cases were in the

sanatorium for other lesions. Twenty of the 118 cases showed renal calcifications of a varying degree and in the 54 cases a retrograde pyelogram was made for diagnostic purposes. It has been our experience that in the early cases retrograde pyelography carefully done has not been harmful and is of prime necessity in establishing a diagnosis as to whether or not the patient requires surgery. However when it is possible for a definite diagnosis to be established otherwise I think retrograde pyelography is definitely contra-indicated. Several years ago I had the unfortunate experience of having a patient develop tuberculous meningitis and die following a retrograde pyelogram.

Treatment

It has been repeatedly emphasized that renal tuberculosis is only a local manifestation of a constitutional disease and consequently all treatment should be based on this premise and the surgical removal of the kidney considered as only an incident in the treatment. This fact is still not fully recognized by the patients or the profession as a whole.

Nephrectomy for renal tuberculosis is rarely, if ever, an emergency operation. When they consult the doctor many of these cases have frequency and no other general symptoms or findings. When investigation shows they have pus and tuberculosis bacilli in the urine from one kidney and negative urine from the other kidney, and no other active lesions; it is granted that probably nothing is gained by pre-operative sanatorium care, but if other lesions are discovered, or the patient's general health is below par, a month or six weeks in a sanatorium will decrease the operative risk and greatly improve the morbidity rate as well as persistent draining wounds and the possible spread of the disease elsewhere.

Nephrectomy for renal tuberculosis is performed in much the same way as for any other renal lesion necessitating nephrectomy, that is by an extra-peritoneal exposure; however there are a few technical details which should be carefully carried out in this disease. A main precaution, fully recognized by all, is that care should be taken to cause as little trauma and compression of the kidney during nephrectomy as possible before clamping off the pedicle because rough handling may squeeze a varying number of tuberculosis bacilli into the blood stream and so spread the infection.

The controversial question in nephrectomy for tuberculosis is the treatment of the ureter. Some radical authors advocate complete nephroureterectomy. This operation has its place but I feel is only necessary in a very small percentage of cases where a definite pyo-ureter is present. Undoubtedly this operation increases the operative

risk; and, as statistics show, does not improve the percentage of ultimate cures; nor does it decrease the number of draining wounds.

I think the commonest practice is to remove as much of the ureter as possible through the incision and carbolize the severed end. Howard, however, advocates sewing the cut end of the ureter to the skin to prevent soiling the wound.

The procedure we carry out is to carbolize the cut end of the ureter and without soiling the wound, thread it into a hard rubber tube. This tube is made fast by bringing the plain catgut ligature, which ties the severed ureter, out through the rubber tube to act as a tension suture. Otherwise the wound is closed without drainage unless definite soiling has taken place. This technique is not new and was copied from that used by the late E. Starr Judd.

In our small series of 64 nephrectomies we have had one case of a small draining sinus for 2 months; one case of a draining sinus for 3 months; and one for 5 months. In the latter case the tube over the ureter was cut too short and retracted below the skin surface; and by neglect, it was not removed for weeks. There was no case of complete failure of a wound to heal and require secondary closure in this series. I might add that I have luckily in this series (knocking on wood) not had an operative mortality.

The fortunate lack of persistent sinuses or gaping unhealed wounds in this small series we ascribe to the insistence of pre-operative sanatorium care for all those patients whom we thought were below par in general health and in resistance to tuberculosis; rather than to operative skill or any special technique.

Kretschmer says, "Especially as important as the operation itself is the post-operative program, a fact which I hardly need stress before this group. With the necessity for a post-operative program I am in hearty accord." In other words these patients should not be nephrectomized and then forgotten. They should be made to realize that their renal tuberculosis is only a part of a constitutional disease. Therefore in their own general interests these patients should receive sanatorium care not only for the immediate benefits, but also to learn the routine of life best suited to their future well being.

Repeatedly I have seen marked persistence of bladder symptoms in patients treated at home, no matter how excellent the home conditions are, and in contrast to this, similar cases in the sanatorium have shown marked improvement. I have no doubt that this is generally true.

What are the indications for and against operation in Renal Tuberculosis? In order to discuss this problem rationally I think we should divide renal tuberculosis into three groups. (1) Pre-

clinical and early renal tuberculosis. (2) The so-called clinical or surgical renal tuberculosis. (3) Bi-lateral renal tuberculosis.

The first group is usually seen in the Sanatorium. This group includes those patients with active lesions elsewhere and a few pus cells and a positive acid fast stain discovered in routine examination of the urine. In these cases the urological examination may reveal a positive acid fast stain with no or a very few pus cells in the urine, from one kidney or both, but retrograde pyelography shows no evidence of disease. I feel these patients are non-surgical but should be re-examined every 3-6 months if the urinary findings persist. Also in this group are the cases showing a minimal amount of pus 10-15 cells to a high power field, and a positive acid fast stain in the urine from one kidney while the urine from the other kidney shows no pus or tuberculosis bacilli. There is little or no bladder involvement. The retrograde pyelogram shows early evidence of disease such as definite irregularity of a calyx. These cases I consider are surgical unless other tuberculous lesions contra-indicate surgery. In our experience these renal lesions do not heal and early removal insures the patient against distressing vesical involvement.

The second group are those cases showing from 15-200 or more pus cells to a high power field and a positive acid fast stain in the urine from one kidney while the urine from the other kidney shows no pus and a negative acid fast stain. These cases have a varying amount of bladder involvement. They are universally considered surgical and this opinion is supported by survival statistics from many sources.

In the third group, bilateral renal tuberculosis the discussion centres around what is considered bilateral renal tuberculosis, and what cases should be subjected to surgery. As stated before, many cases of frank unilateral renal tuberculosis show either a positive acid fast stain or a positive guinea pig inoculation from the so-called good kidney which shows only a few pus cells and a normal pyelogram. We do not feel that there is sufficient evidence to contra-indicate the removal of a definitely diseased kidney. The statistics of Emmett and Kibler support this contention. However, in cases that show definite evidence of active tuberculosis in both kidneys surgery is not indicated unless one kidney shows evidence of extensive destruction and is causing symptoms that nephrectomy might or would remedy, and the other kidney shows a minimal evidence of disease. In such cases I think surgery is justifiable.

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PAEDIATRICS

Edited by S. Israels, M.D.

A Case of Primary Peritonitis

C. D. Ellis, M.D.

Presented by Dr. C. W. Clark at the Children's Hospital, 4th March, 1948. This 17 day, white baby girl was admitted on the 24th February, 1948, with a history of abdominal distention for 26 hours and vomiting for 12 hours.

At 9 p.m., 23rd February, she became irritable and refused to nurse. The mother noticed that the abdomen was distended at that time. The following morning she started vomiting yellow-green fluid and continued to vomit eight times during the day. As the abdomen was becoming more distended, she was given several enemas by family physician with no faecal return. When she was admitted at 11 p.m., 24th February, she did not appear seriously ill. Rectal temperature 99°, pulse

rapid and strong; respirations rapid and shallow. There was considerable abdominal distention, no masses were palpable. On auscultation of abdomen with stethoscope, no intestinal sounds could be heard. A rectal examination was negative. W.B.C. 9,700 per ccm. X-ray of the abdomen showed large amounts of gas in the small intestine and throughout most of the large bowel. No gas was shown in the rectum.

During the night the infant continued to vomit green fluid, and an examination at 8 a.m. showed generalized tenderness of the abdomen and marked distention. A laparotomy was done at 9.45 a.m. 25th February. Thick pus was found in the pelvis, the appendix and terminal ileum appeared normal, no Meckel's Diverticulum, the fallopian tubes were swollen and fiery red. A diagnosis of primary peritonitis was made on the above findings.

Samples of pus were removed for laboratory investigation. Two grams of sulfanilamide and 200,000 units of penicillin were put into the peritoneal cavity, and a penrose drain inserted down into the pelvis.

A haemolytic staphylococcus aureus was grown from the peritoneal pus, which was inhibited by the presence of eight units of penicillin per cc. Post-operatively the infant was given:

1. 1½ grains of soludiazine per pound (intravenous) for one day.
2. Oxygen by oxadome for one day.
3. 20,000 units of penicillin (intramuscular OH3, for ten days.
4. Continuous gastric suction and intravenous including 100 cc. of blood for two days.

Oral feedings were started on the third day, and were taken well with no vomiting. Temperature became normal on 27th February, and spiked to 102° on the 3rd March, remaining level to date. Penrose drain removed 6th March. Incision healing well. Patient's condition following operation has been satisfactory throughout.

Discussed by Dr. Clark

A series of 120 cases of primary peritonitis were presented by Drs. Gross and Ladd in their text, "Abdominal Surgery of Infancy and Childhood." The peritoneal fluid contained hemolytic streptococcus in eighty-five cases, pneumococcus in thirty-five cases. They didn't report any instances of primary peritonitis due to staphylococcus. The avenue by which the organisms enter the peritoneal cavity cannot be accurately determined. It was their belief that invasion by way of the uterus occurs but rarely. Primary peritonitis in their series appeared with about equal frequency in males and females.

The reduction of mortality from 68% for pneumococcal and 65% for streptococcal primary peritonitis in 1930 to 12% in the former and 22% in the latter in 1940, reflected the efficiency of the programme of treatment which may be summed as follows:

1. Early incision and drainage of peritoneal cavity with minimal manipulation.
2. Rapid identification of organisms from peritoneal cavity.
3. Immediate post-operative intravenous administration of sodium sulfapyridine.
4. Constant gastric suction and high concentration of oxygen to relieve the abdominal distention and vomiting.
5. Maintenance of adequate fluid and caloric intake by parenteral route.

In the discussion of the surgical pathology found in the pelvic organs, Dr. Bruce Chown stated

that in all cases of peritonitis the fiery red inflammation of the fallopian tubes is present and does not indicate invasion of peritoneal cavity by this route.

Psychological Aspects of Obesity

Hilde Bruch

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The Bulletin of the New York Academy of Medicine,
Feb., 1948; 73-86.

In this discussion the author stresses that in the majority of fat people physiological disturbance is not the cause of obesity.

The unhappiness and misery of obese people is not experienced as pain or bodily discomfort but in the individual's relationship to his fellow men. In this sense obesity belongs to the group of social and psychological disorders.

The fear of embarrassment in public results in young people becoming withdrawn and seclusive. Shyness, oversensitivity, easy discouragement in the face of difficulties, a tendency to depressions and a phlegmatic manner may be considered sequels to their constant concern as to the impression they make because of their obesity—at least, it might appear so. For many young people, the physical fact of being fat is the insurmountable obstacle in the road toward a cherished professional goal. Again, the author, adds, it might appear so.

What puzzled the author, however, previous to her present investigations, was the complete unwillingness or inability of the obese to do something about it. Instead of bending every effort to remove the cause of their suffering, their very reactions to obesity contain all the elements which go toward making their condition progressively worse.

Under normal conditions, a decrease of activity is associated with a reduction of appetite. Why this normal regulation is disturbed in obesity is discussed. If food stands for love, security and satisfaction, and on the other hand, if social contact and muscular activity are associated with the concept of danger, threat and insecurity, the simultaneous love of food and avoidance of activity becomes comprehensible. The functions of eating and exercise are endowed with an emotional meaning different from the normal.

Eating and activity acquire this emotional significance in a family setting, which, though not specific, is characteristic for obesity. The typical obese family is of small size. The mothers are dominant in their influence in the family. These mothers try to realize in their children their own dreams of a life of luxury and idleness of which they themselves may have felt deprived. Their

expression of affection is overfeeding the child and sparing him the necessary task of doing things for himself. Neither the dignity of personal achievement nor independence are permitted the child. The frequently expressed wish by the mother for a daughter, which represents a more permanent possession, foists the role of a daughter on the son. The "feminine" characteristics of obese boys are thus produced.

The excessive demands made upon the mother in her anxious overprotection of the child often irritates the mother. She nags and beats him to relieve her own exasperation. Yet in her heart she wants his affection, and food is the constant bribe to keep him close and dependent. She will be the first to berate him for his awkwardness and greediness as he grows older.

Security, competence, and worth-whileness are thus mal-developed and the child grows up with a fundamentally low self-esteem and a feeling of helplessness. The world becomes a dangerous place

of uncertainty and anxiety. He returns to his protecting mother, and, since his mother has been a person who has been unable to give of herself but has appeased all his needs with the offering of food, then food becomes the weapon against anxiety and a source of comfort under emotional stress.

The fat person will not adhere to diet which is prescribed nor follow advice for more active social participation. While on a reducing diet he needs the sympathetic support of a physician who will also help him gain an insight into the nature of his real problem. This can be best accomplished by regular and continuous contact between doctor and patient. Unwarranted diagnosis of endocrine disfunction as a cause of obesity in the majority of cases aggravated the situation since it seemed to confirm their worst fears about being inadequate for life.

13 References.

B. Shuman

Manitoba Medical Service

Manitoba Medical Service

From the Resolutions and Regulations made by the Board of Trustees, a selection is being published in this journal as occasion demands.

The following rulings are from current minutes of proceedings:

(1) The Block system, now passed experimental stage, is being continued. There are eleven blocks, in order as on our list — Internal Medicine, Paediatrics, Neuropsychiatry, Surgery, E.E.N.T., Dermatology and Syphilology, Radiology, Pathology, Gynaecology and Obstetrics, Anaesthesia, and General Practice.

(2) Where dues to the Manitoba Medical Association were in arrears at March 31st, 1948, action

was authorized by the Board, to retain the April cheque till the terms of contract were proven to have been fully met.

(3) The Canadian Medical Association, in its survey of prepaid medical care planning, asked for information from this service. Copies of Charter, By-laws and other material were sent for inclusion in this survey.

(4) It is now obligatory to certify the content of the claim form by the written signature of the medical member, and it is urged that due care be given to the nature of the information asked on the form. The detail is convertible to statistical data, to be taken into a record, already rated as high actuarial value.

Poliomyelitis Conference

The National Foundation for Infantile Paralysis announced that it would sponsor the First International Poliomyelitis Conference at the Waldorf-Astoria Hotel, New York, next July 12 to 17.

The Department of State has been requested to transmit invitations to more than 60 foreign governments to send official delegates to the conference. These officials will be asked to present summarizations of the problems of poliomyelitis in their countries at a special session. Presiding officer at this session will be Thomas Parran, M.D., Surgeon General of the United States Public Health Service.

Official host to the delegates will be Basil O'Connor, president of the National Foundation, while Hart E. Van Riper, M.D., the Foundation's medical director, has been appointed general chairman of the conference.

The program will include scientific and technical papers on research and treatment of poliomyelitis to be presented by professional authorities in the field from this country and abroad. In addition, there will be panel discussions on the various subjects, a scientific exhibit section, demonstrations of muscle testing and treatment procedures and a film programme.

Hospital Clinical Reports

Reported by J. M. Whiteford, M.D.

Winnipeg General Hospital

Reported by J. W. Whiteford, M.D.

Left Sided Appendicitis

Dr. A. A. Klass

Dr. Klass presented the case of a boy of 7 years, first seen with a history of right sided abdominal pain for one week. Investigation at the time showed moderate right lower quadrant tenderness and pain, with temperature of 100 and white blood count of 14,000. During the subsequent two weeks all signs and symptoms subsided. This was considered to have been an acute subsiding appendicitis, and some weeks later an interval appendectomy was done. At operation only loops of small bowel could be delivered through the McBurney incision, even after considerable search. Finally the terminal ileum was traced towards the left lower quadrant and the caecum was discovered on that side; it was delivered and an appendectomy was done. Following convalescence barium studies of the gastro-intestinal tract were carried out, revealing the caecum low in the right lower quadrant just to the right of the mid-line. This position did not correspond to that found at operation, and a variety of possible explanations were considered.

Dr. Klass briefly reviewed the embryological background for the normal anatomy of abdominal contents and then outlined the possible explanations of the unusual findings in the case. (1) Dextroposition of viscera: This is an excessively rare condition in which all viscera occupy positions equivalent to a mirror image of normal. X-ray studies of the chest are useful in this connection, as a dextrocardia may easily be diagnosed in this way. (2) Abnormalities of mid-gut loop rotation and/or fixation: These abnormalities result from failure, complete or incomplete, of the mid-gut loop to undergo the normal degree of rotation during the re-position of the physiological umbilical hernia during early months of development. (3) Relatively normal arrangement of abdominal viscera with the exception of an unusually long mesocolon associated with the ascending colon, producing a caecum of great mobility.

As a result of the unusual disposition of the abdominal contents a variety of abnormalities of their mesenteric suspension occur. Dr. Klass drew particular attention to one of these termed the duodeno-colic isthmus—a mesenteric band extending from duodenum to colon which may compress and in some cases completely obstruct the duodenum. This condition, whether it has given rise to symptoms or not, is commonly found in association with all cases of mal rotation of the mid-gut and should be treated in the manner de-

scribed by Ladd and Gross. This consists simply of section of the band, allowing the large gut to fall down to the left, relieving the potential duodenal obstruction. It is considered by some workers that intermittent obstruction due to the condition outlined above may give rise to a syndrome resembling Coeliac disease.

The embryological implications of this case were discussed by Dr. Ian Thompson, Professor of Anatomy, and Dr. Monie, of the Department of Anatomy, and suggestions were made for further investigation by barium studies.

Skin Temperature Measurements in Occlusive Arterial Diseases of the Extremities

Dr. J. Doupe

The Cause of Cold Feet in Arterial Disease

The physiology of the circulation of the toes was briefly reviewed and illustrated by charts of skin temperature measurements in normal subjects. These were then contrasted with the findings in cases of chronic occlusive arterial disease which showed an alteration in the behaviour of the circulation which was inexplicable on the basis of a simple reduction in blood flow. The similarity of these alterations to those observed in cases of peripheral nerve lesions lead to the conclusion that a nerve lesion, possibly a peripheral neuritis, was present and that part of the habitual coldness was due to vascular spasm occasioned by hyperresponsiveness of the denervated vessels to local cold.

The Use of Protein Bound Plasma Iodine Determinations in Clinical Medicine

(Presented at Winnipeg General Hospital

by Dr. W. F. Perry)

The development in recent years of reasonably accurate and reproducible techniques for the determination of blood iodine has resulted in an accurate and reliable method of assessing thyroid activity.

It has been shown that the physiologically active iodine of blood, i.e., the iodine which is a reflection of the amount of circulating thyroid hormone, is in combination with the plasma proteins—chiefly the albumen fraction. The determination is thus performed on the precipitated plasma proteins rather than whole blood or plasma.

During the past 4 months, the protein bound iodine has been examined in 22 normals: 11 cases of hyperthyroidism, 18 cases of hypothyroidism and 11 cases of non-toxic goitre.

In normals the protein bound iodine has been found to range from 4.5-9.5 $\mu\text{gm}/100 \text{ cc.}$ averaging



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6.8 ugm/100 cc. In hyperthyroidism from 14-18 ugm% averaging 18 ugm% and in hypothyroidism from 0-3 ugm% averaging 1.3 ugm%. All cases of non-toxic goitre have had plasma iodine values within the normal range. In a number of cases of hypothyroidism and hyperthyroidism the blood iodine is being followed during the appropriate therapy. The return of the protein bound iodine to normal levels is accompanied by improvement in clinical status.

Preliminary work indicates that the protein bound iodine is possibly a better index of thyroid status than the B.M.R., especially in hypothyroidism; also that in cases under treatment changes are noted in the protein bound iodine sooner than are changes in the B.M.R. or the patient's clinical status.

The technique is being used to examine thyroid activity in other conditions than those of pure thyroid pathology eg. anxiety neurosis, leukemia, nephrosis, hypertension and the adaptation syndrome.

Chronic Lymphoedema—A New Treatment

Dr. E. S. James

Dr. James reported on a new technique for the surgical treatment of chronic lymphoedema of the limbs, described by Dr. Macey, of Texas. He reviewed briefly the fundamentals of the technique developed by Kondoleon and Homans.

In Dr. Macey's technique nothing is done to the thigh. An incision is made from knee to ankle and full thickness flaps, including skin, superficial and deep faciae, are turned back; a split thickness Paget dermatome graft is applied to the muscle thus exposed, the flaps are replaced and pressure dressings applied to the limb. Approximately two weeks after the graft was applied the original full thickness flaps are again dissected free and excised. This procedure is repeated twice, or three times, until the entire circumference of the limb has been treated. Wax models of technique and its end result were shown, and a very satisfactory cosmetic result is reported. It is essential when placing the graft to avoid placing the edge of the graft over a bony surface, e.g., tibia or malleoli.

Dr. N. Merkeley: This technique appears to differ only slightly from Homan's original technique, and I should like to ask what advantage it has over the earlier operation. It is important to emphasize that regardless of the technique used all patients who have had large split thickness grafts below the knee require support of the leg throughout life.

Dr. John Gunn: Results of the Kondoleon operation were usually moderately satisfactory but the operation was very extensive and entailed much post-operative shock.

Medico-Historical

J. C. Hossack, M.D.

Greek Medicine in Greece

The Art of Medicine was born in Egypt but Scientific Medicine had its beginning in Greece. I have given you a glimpse of Egyptian practice and have shown that it was rational only when magic is accepted as a rational system of philosophy. I have shown, too, the profound influence of their religious beliefs upon every Egyptian from the King down to the meanest slave. The King was the son of a god and the chief priest of his father. Priests ruled in almost every sphere. They were the teachers and scholars and professional men. The discovery, development and application of all the then known sciences—and they were several—came from these servants of the gods who could not, or would not, separate science from theology. As the physicians were also priests Egypt was not a fertile land for the development of a pure medical science.

An understanding of the general history of a period is essential to a proper comprehension of the history of medicine during the same period. Even as they do today so in every age have politics, economics, science, art and religious beliefs affected, and in turn, been affected by the state of medical knowledge.

Greek culture had a most profound effect upon medical thought. For nearly a thousand years (700 B.C.-300 A.D.) its influence was paramount and since that time we have followed in the path first opened by the Greeks. The millenium during which Greek thought was dominant includes three distinct periods, the first in Greece, the second in Alexandria and the third in Rome. Preceding this age of reason, however, is a not unimportant time when magic alone flourished.

The reasons why Greece had such a marked effect upon the development of medicine are to be found in the nature of the country, the method of government and the attitude towards religion. It was these circumstances, rather than the people themselves, that made the Greeks what they were. The myths and legends which, to the Ancient Greeks, took the place of historical facts, are interesting stories but not accurate history. The ancestors of the Classical Greeks were nomadic tribesmen, still in the food-gathering stage of civilization, who wandered southward from what are now the Balkan States. They claimed descent from a common ancestor Hellen, and called themselves Hellenes.

The invading Hellenes found in Greece an established culture—the Minoan—then in an advanced state. This culture was borrowed in part

from Egypt and in part from Elam and Sumeria. After the conquest of Greece the victors absorbed many of the Minoan ideas and upon this basis founded their own culture. The centre of Minoan civilization was the island of Crete but it had many outposts, among them Troy, and the Siege of Troy is believed to have been one of the last engagements between the old and the new inhabitants of Greece. There is reason to believe that the conquest of the country occurred between B.C. 1200 and 1000.

A glance at the map of Greece will show how indented are its coast lines and how numerous its mountain ranges. These natural barriers to free intercourse resulted in Greece becoming a collection of city-states rather than a nation. Indeed the ultra-nationalism and isolationism of the citizens were so great that Greece was never a nation. From 760 on the tribes would come together once every four years at Olympia to celebrate the Olympic Games. From time to time loose confederacies were formed for the purpose of fighting each other. Only the threat of subjugation by the Persians united the whole people but this union was broken just as soon as the Persians ceased to be a menace. Disunion and internecine strife made it easy for Philip of Macedonia to take possession of Greece in B.C. 388.

Philip was the first to call himself King of Greece. There had been for centuries a dual monarchy in Sparta but elsewhere there had been no real king. There were at different times and in different places tyrants or despots who, like the modern American "boss" ruled for his own advantage and that of his henchmen. Sometimes rule was by oligarchy where a few (usually rich) governed the many, again for the advantage of themselves and their class. Elsewhere there were democracies where every citizen had a voice but restrictions were many and electors were few. In spite of this, however, under the rule of a benevolent despot or of a mild oligarchy or of an active democracy the Greeks enjoyed much freedom. They had freedom of thought, freedom of speech, freedom of religion (a freedom almost universally enjoyed in pagan times) and, for the most part, freedom from fear.

In this atmosphere men could speak as they thought and could argue with others who thought otherwise. Furthermore they could satisfy their curiosity by observation, experimentation and discussion. As a result there appeared many independent thinkers—the philosophers—who were chiefly metaphysicians but who were also, in many cases, physicians also for surely among natural

phenomena those which concerned life, sickness and death were of supreme interest. Unlike the Egyptian scientists, teachers and thinkers, these Greeks were not priests. There were no priest schools in Greece.

Now, before we proceed to the consideration of the philosopher - physicians and their effect upon the development of medicine we must turn to the dark days when magic was the only philosophy and scientific medicine had yet to be born. The first "doctor" in Greece was Apollo, the god of healing and of music; a natural association for health and music alike suggest harmony. The earliest records in which are medical data are the Homeric Poems, the Iliad in particular containing many references to wounds, to anatomy, to surgery and a few to medicine. One of these latter is in the first book of the Iliad where there is a description of the plague which decimated the Greek host before Troy. You will recall that Chryseis, daughter of Chryses, priest of Apollo, had been taken as a prize by Agamemnon who refused to give her up. In despair the priest invoked his god: "O Smintheus, sprung from fair Latona's line,

"God of the silver bow, thy shafts employ,
"Avenge thy servant and the Greeks destroy.

"Thus Chryses prayed: the favouring Power
attends,

"And from Olympus' lofty tops descends.

"Bent was his bow, the Grecian hearts to wound,
"Fierce as he moved, his silver shafts resound.

"The fleet in view, he twanged his deadly bow,
"And hissing fly the feathered fates below."

It is interesting to note that Apollo is here invoked as "Smintheus," the mouse god and the description that follows suggests that bubonic plague was the illness suffered by the Greeks. It reminds one of the biblical incident when "Ashdod and the coasts thereof" were smitten by a plague of "emerods" (buboes) by an angry Jehovah. You will remember that the people were ordered to "make images of the emerods and of the mice that mar the land." The ancients in general believed that acute diseases including epidemics were god-sent and we, today, know the role played by rodents in epidemics of plague. The fact that mice were associated with these classical epidemics is revealing.

Apollo, the god of health and, at times, of disease, like most of his male colleagues in Olympus, had an eye for a pretty girl. His current innamorata was a maiden called Koronis. You will remember that the creature associated with Apollo was the raven. One day this raven met a crow who said, "That girl Koronis, of whom Apollo is so fond, is, I believe, no better than she should be.

Just yesterday I saw her kissing a very good looking young stranger. However," continued the crow "don't say anything to Apollo, I know his nasty temper and have no desire to find myself on the end of one of his arrows." The raven agreed but, after the nature of gossips, immediately told the story to Apollo. Filled with anger the god sought out his mistress. Accusing her of unfaithfulness he "bent his vengeful bow" and soon the white bosom of Koronis—which he had so often pressed to his own—was crimsoned by the fast issuing blood. Koronis admitted the embrace but said the youth was her brother. She denied that her heart had ever held other than Apollo; and, even as she died, she swore that the child then leaping in her womb was indeed his own. The grief-stricken Apollo would have undone his vengeance but, god though he was, he could not restore the life that had fled. One thing, however, he could and did do. Plucking the arrow from the now unbeating heart and using it as a lance he cut through the belly wall and into the womb whence he drew forth the child. That child was Asclepios.

To harmonise the legends of the birth of Asclepios we must infer that Apollo's doubts returned and that he abandoned the child who would have died but for the timely arrival of a goat which wet-nursed him until, by another change of mind, Apollo placed him with Chiron for care and instruction. Thus was Asclepios born by cesarean section and fed artificially. This is more than a pretty tale. It is an expression of Greek opinion that the ideal physician must have the wisdom of the gods and the humanity of mortals. And so Asclepios (Aesculapius), who became the symbol of the ideal physician, was given a divine father and a mortal mother.

Aesculapius was instructed in all things by Chiron the Centaur. He profited so much by this instruction that he had power to heal all diseases. So successful was he that Pluto, the King of the Underworld, became worried by the dearth of deaths. At his persuasion Zeus hurled a thunderbolt at Aesculapius and so ended the depopulation of Hades. After his death Aesculapius was deified and his temples were filled by the sick. His children also were famous. His daughter, Hygieia, was his constant companion and fed the sacred snake. Panacea likewise attended him as he healed. His sons, Machaon and Podalirius, played prominent roles in the drama of the Iliad. To Machaon his father gave "skillful hands to draw out darts, make incisions, and heal sores and wounds." But his other son he "endowed with nobler gifts for he placed in the heart of Podalirius all cunning to find out things invisible, and cure that which healeth not." In other words he made him an internist!

The original Aesculapius was without doubt a man of extraordinary abilities which legend magnified. After his deification many temples were erected to him and, such was the credulity of the people, that these were thronged by pilgrims bent on being healed. The priests were cunning. They built their temples amid pleasant and salubrious surroundings, often near a medicinal spring. They kept inns and boarding-houses near the temples and insisted upon an impressive and expensive ritual which every patient had to follow before being admitted to the temple. Healing when it occurred, came at night while the patient slept. Likely soporific drugs were used because sometimes operations were done. The priests claimed cures beyond belief or understanding. The blind were made to see, the lame to walk. All this is attested by tablets and inscriptions. Perhaps the most remarkable case of all was that of Cleo who had been pregnant for five years but who was delivered of a half-grown lad after a night in the temple.

The priests gave advice as to diet, bathing, exercise and drugs. (They believed in drugs whose effects could be seen and therefore stressed emetics and purgatives). When cure failed to result the priests were always able to convince the patient that it was his own fault. When cure did ensue the temple coffers were filled with gold and silver. It was a good racket.

The priests of Aesculapius were quacks, not doctors. The real physicians were the Asclepiads, members of medical guides called asclepiadae. Some engaged in teaching, some in local practice. All spent more or less time in travel. On their travels Asclepiads would meet and discuss their professional problems. That was the post-graduate instruction of the day. The world at that time was not very large and many physicians covered most of it. The earliest teaching was private and personal. Later we shall have a word to say about the schools of the Asclepiadae.

The earliest schools were founded by philosophers. Physicians were then classed as philosophers and all philosophers were interested in medicine. It is no wonder, then, that men whom we regard as philosophers, rather than as physicians, were the first to found schools in which medicine was taught. One of the oldest of these schools, The Ionic, was established by Thales of Miletus, about 600 B.C. Thales had studied geometry in Egypt and was the first to teach it in Greece. Medicine was included merely as a branch of philosophy. There were, however, many distinguished teachers associated with this school and one of the chief of these was Empedocles of Agrigento. Those who went through the Sicilian campaign will remember the town. Empedocles (54-443) was a conceited little man

who almost convinced himself that he was, as some of his patients said, a god. To foster this idea he went to the extreme of throwing himself into the crater of Etna trusting that when his disappearance was noticed it would be assumed that he had been translated. Unfortunately for Empedocles Etna refused to be a party to the fraud, and, by ejecting his brazen sandals gave the show away.

Empedocles originated the long enduring theory of the four elements—air, fire, water, earth. He held that nothing could originate or be destroyed but could only change its form—the first enunciation of the indestructibility of matter. He looked upon human, animal and vegetable life as states of banishment from the Sphairos or seat of the gods; a banishment that could be ended by purification. He gave us the words “amnion” and “chorion,” and believed that the embryo was nourished through the navel. He taught that movement of the blood upward expressed the air and caused expiration, while its movement downward allowed inspiration. Disease, he said, was due to “enmity” of the elements and health to their “friendship.” Because of his views upon the nature of life his treatment was theurgic.

The Greeks did not inhabit merely the area we now call Greece. They populated the adjacent islands and mainlands. The south of Italy was colonized and became known as Magna Graecia. Here, at Crotona an important school was founded (about 550 B.C.) by Pythagoras, an exiled native of Samos. He had visited Egypt where he had studied mathematics especially. His school was, in a way, the precursor of later monasteries because he and his students ruled their lives by definite principles. His philosophy was a complicated one based on number. He was the first Greek to teach the immortality of the soul. God, he said, is the soul universal and at the other extreme are demons. Man is the lowest of the higher, and the highest of the lower, beings. After death the soul ascends or descends according to whether it deserves reward or punishment. The basis of life is heat. Certain diseases are caused by demons. The virtue of plants as medicines lies in their magical properties. He condemned surgery but used plasters and ointments. He is said to have discovered the optic nerves and Eustachian tubes but most of his physiological deductions were wrong. Plato was a student of Pythagoras and was profoundly influenced by his teachings.

Very different to those of Pythagoras were the teachings of his contemporary Leucippus. His philosophy was based upon the idea that all things could be reduced to infinitely small and infinitely numerous atoms. Perception was due to impressions produced by the motion of atoms. The founda-

tion of the world and of thought was matter and the foundation of matter was atoms. He believed that mental disease was due to disease of the brain, a conception which was not again held until the 18th century.

Perhaps the Asclepiadae were actually founded by Aesculapius—they held that they were—but in any case they were the true physicians. They had, in time, a number of schools—at Rhodes, Cyrene, Crotona, Cridus and Cos. There were instructed the sons or adopted sons of doctors, who entered school at the age of 10-12. Their teaching was secret for they were members of a guild. There was no charge for instruction, just as there were no set fees for treatment, but some teachers charged as much as five thousand of our dollars. This was probably in the case of the children of laymen. Graduation consisted in subscribing to the oath.

The schools of the Asclepiadae tended to differ in their teachings. Two of the most important institutions were at Cnidus and Cos. The trends developed there have, in a measure, persisted to the present. At Cnidus disease was regarded as a local affair involving specific organs or parts. Symptoms were studied with this local background in mind and a number of diseases were definitely recognized, among them phthisis, typhus, certain ailments and bladder affections. Treatment was drastic whether medical or surgical. Ribs were cut, kidneys removed and so on. History taking and physical diagnosis were undertaken but the essence of their practice lay in the belief that disease was a local process. Strangely enough they did not practice phlebotomy. Among the students as Cindus two were especially important, one, Nichomarchus, became the father of Aristotle and the other was Erasistratus of whom more later.

The school at Cos was established perhaps as early as 600 B.C. It looked upon disease as a general condition. Symptoms were studied in relation to the patient as a whole, rather than as local phenonema. In etiology and prognosis—important studies—the patient himself was considered as a factor. Treatment was much less drastic than at Cnidus although phlebotomy was common. Emphasis was laid on the healing power of nature and this was assisted by baths, diet, exercise and mild medicine. It was in Cos, of which island he was a native, that Hippocrates studied.

Greek medical practice took a variety of forms. Excluding what to day we call non-ethical practice the regular physicians employed themselves in a number of ways. Unlike the Egyptian doctors who were all specialists, the Greek physicians were all general practitioners. Some gave their time to teaching. Many were itinerant. Others were employed by city-states to care for their soldiers, their sailors, their citizens, or their poor.

Such employment did not detract from the

high opinion in which the profession was held and the pay was very good. Slaves were looked after by men who were themselves slaves or by the assistants of the popular doctors who attended the owners of the slaves. There were no hospitals as we know them but there were places called *latrines* where doctors saw their patients and, when necessary, operated upon them. Some of these were private; others were public. Usually they were thronged but less by patients than by idlers who gathered there in order to exchange gossip.

The Greeks whose names come quickest to mind—Sophocles, Socrates, Plato, Aristotle, Herodotus—were all contemporaries of Hippocrates who thus lived in the Golden Age of Greece, the Age of Pericles. "Great men are more the offspring than the creators of their epochs" and the epoch in which he lived brought forth the genius of Hippocrates. Persia had ceased to threaten and Hippocrates had reached mid-age before the disastrous Peloponnesian War initiated that period of internecine strife that led to the ultimate destruction of Greece and its conquest by Philip.

Hippocrates was born in Cos, in the year B.C. 460. His mother, a mid-wife, claimed descent from Hercules. His father, a physician, was a descendant of Aesculapius. He was enrolled as a student with the Asclepiadae of Cos where his father was his first teacher. After the death of his parents he went upon his travels which lasted twelve years and led him to all the important medical centres of the time. It is believed that he was in Athens during the great plague, the story of which, vividly written, you can read in the pages of Thucydides who was an eyewitness of it. His travels over, he settled in Thessaly where he died in 370 B.C.

Hippocrates lived to hear himself called "the Great" and his name has been held in reverence from that time to this. For what reason? Chiefly because Hippocrates was in fact, as Aesculapius was in legend, the ideal physician. He had wisdom, skill, and sympathy. Hippocratic medicine has always been medicine at its best, ethically and scientifically. To him "the Art" was the most noble of callings, too noble to be debased by the obscurantism of the priests or to be prostituted for gain. The ability of the physician was not given him to barter for gold but was to be applied whenever the need arose. "Be not grasping," he said. "Consider the means of your patients and if they be little, give your services for nothing even to strangers." Love of his fellow-men was the motive of the true physician. "Where there is love of men, there is also love of the Art." To him, as to every true physician since his time, the real reward is the recovery of the patient. Money is never the incentive to cure or the price of cure but only a mere incidental.

Not only did Hippocrates embody the ethics of practice, he also had within him "the authentic spirit of medical research which, rejecting assumption and unsupported theory, discovers its strength in contact with healthy and diseased men and women." Hippocrates was an experientalist rather than an experimentalist. He trained his eye so that when he looked he saw. He used his brain as an organ of thought and with it examined naked facts in their true form, unlike the theorists who made the facts fit their theories as if these latter were a bed of Procrustes. He refused to see magic or the miraculous in either cause or cure. By taking the secrecy out of medical teaching he established "profane" as distinguished from sacerdotal or guild medicine. He realized that knowledge could be gathered only by close observation of the processes of nature and by logical deductions from the facts observed. Nature was his guide and preceptor. "Follow Nature," he said. "A physician is a servant, and not a teacher, of Nature."

In his history-taking he paid attention to heredity, previous diseases, the age and occupation of his patient, the climate and season. In his recorded cases he gives the symptoms, the day by day progress, the treatment and the result. When the patient died he offers no excuse but says, "I have written this down deliberately, believing that it is valuable to learn of unsuccessful experiments and to know the causes of their failure."

His pathology was that of Empedocles—the four elements—air, fire, water, earth; and their characteristics; dryness, heat, moisture, coldness with which were associated yellow bile, blood, mucus and black bile, misbehaviour of these resulting in disease. His observations were more accurate than his theories. He gave excellent clinical pictures of epilepsy, puerperal sepsis, mumps, the varieties of malaria, lathyrism, phthisis, stroke and many others. The descriptions are so clear that the diseases can be easily recognized today. He appreciated the stages of chronic disease as for example when he writes "From a spitting of blood comes a spitting of pus." Likewise he realized the importance of apparently minor injuries. "Do not consider any injury of the head to be so trivial that it can be disregarded, or any so severe that death must ensue."

Hippocrates was recognized as a skilful surgeon. His books on fractures, dislocations and wounds, considering the conditions under which they were written, are regarded as being equal to any except the most recent. Some of his methods of treatment are quite modern. The cleanliness that he brought to the operating room was not equalled until the time of Lister. He described healing by first and second intention and his treatment of wounds was, by our standards, sensible

and even scientific. He practiced obstetrics but, inasmuch as normal cases were cared for by midwives, the cases seen by him and his contemporaries were abnormal and were treated surgically. He practiced orthopedics, associated (the first to do so) Pott's Disease with disease of the lungs, describes the Calot treatment of spinal deformity, and applied apparatus for the cure of club foot.

Treatment in the hands of Hippocrates was an effort mildly to assist nature. He studied his patient as an individual and sought by careful observation to detect the indications for active treatment. Timidity and rashness he alike condemned as evidences of incompetence on the part of the practitioner and as sources of danger to the patient. He made almost a science of dietetics. Exercises, both active and passive, he employed for he had studied in the School of the Gymnasts. Hydrotherapy was important. He used few medicines and these were usually mild. Behind and directing all his treatment was the healing power of Nature—*vis medicatrix naturae*. Nature did the healing, the physician merely helped. Centuries later another great Hippocratist, Pare, put it in another way—"I dressed the wound but God healed it."

"Life is short, Art is long, Decision difficult, Experiment perilous" so wrote Hippocrates in his old age. Decision, or prognosis, he held to be of great importance. By it he gauged the chances of success or failure and upon it he based his treatment. Its practice demands a full knowledge of symptoms and circumstances and the significance of these. In his "On the Prognostics" he gives that classical description of approaching death which we call *facies Hippocratica*—the loose, blanched lips, the half open mouth, the cold ears, the sharp nose, the sunken eyes, the livid eye lids. He realized the mortal significance of picking at the bedclothes, of cold hands and of what we now call Cheyne-Stokes breathing (he says of one patient "The respiration throughout was like that of a patient recollecting himself").

The "Epidemics" show a first hand knowledge of typhoid, diphtheria, puerperal sepsis, tuberculosis. The "Aphorisms" are brief generalizations many of which have become medical common places. "Apoplexy is commonest between the ages of forty and sixty." "Phthisis comes on mostly from eighteen to thirty-five years of age." "In cases of jaundice hardening of the liver is a bad sign" (cancer). Convulsions supervening on a wound are deadly." (tetanus). "Food or drink slightly inferior in itself, but more pleasant, should be preferred to that better in itself but less pleasant." "If in any illness sleep does harm it is a symptom of deadly import." "Cold sweats in conjunction with an acute fever

indicate death, but with a milder fever only prolonged sickness." "Those naturally very fat are more liable to sudden death than the thin."

The Works of Hippocrates—which are not all from his pen—are readily available in the English translation of Francis Adams, the erudite (and professionally skilful) Scottish country doctor. Every History of Medicine quotes from them more or less extensively. There is no need, then, to dwell upon them further. The most famous is the Oath, the embodiment of medical ethics. In it each graduand expressed his duty to his past teachers and future students and his responsibilities towards his patients. The latter he must always help and never harm. He swears to keep "pure and holy" his professional and private lives. He undertakes to do only those things he is qualified to do. And, as his reward for carrying out this oath, he asks only for a good name among his fellows, not for gain.

Less well known than the Oath is the Law. In it are given the requirements necessary for a student of the Art. "First of all a natural talent is required, for, when nature opposes, everything else is in vain." "The pupil must also bring to the task a love of labour, and perseverance, so that instruction taking root may bring forth proper and abundant fruit." "There are, indeed, two things, knowledge and superstition, the one makes its possessor really to know, the other to be ignorant."

Hippocrates, unlike the philosophers, established neither a school nor a theory and even before his death in B.C. 370 his principles were being disregarded. Partly this was due to the growing influences of Plato, the student of Socrates and Pythagoras. Like his teachers he dabbled in medicine but was essentially a mathematician. His school—the Dogmatists—placed reason before observation and because of that their medical teachings were sterile. Among the pupils of Plato was, however, one who left an indelible mark on medicinal progress. This was Aristotle, the son of Nichomarchus physician to Philip of Macedonia and for a while tutor to Alexander the Great. Taught in a school of mathematics, for such was Plato's academy, he blazed the trail along many allied paths — mechanics, physics, mathematics, chemistry, to name some of them. In addition he was a psychologist and above all a biologist. He founded the sciences of comparative anatomy, embryology, zoology, entomology and botany. The work he began was, in many cases, not resumed for centuries. Alexander gave him great sums to continue his observations and supplied him with hundreds of specimen collectors who covered the Empire. As he taught he restlessly walked too and fro forcing his students to do the same whence

they were called "peripatetics."


He dissected an enormous number of animals. There was no creature too large or too small to be beyond his curiosity. He studied the embryology of the chick especially and saw, without artificial aid the early beating of the tiny heart. He saw, also, the heart of other animals still beat after death had come and it was for these reasons that he placed the heart as the chief organ of the body, the seat of intelligence.

Despite the fact that Hippocrates and, earlier still, Alcmaeon had regarded the brain as the seat of reason, Aristotle reduced that organ to a mere cooler of the heart. In some cases he misinterpreted his observations but most often his deductions have been proven correct. He gave the aorta its name. He differentiated between arteries and veins. He divided animals into vertebrates and invertebrates; and fishes into bony and cartilaginous. He had a conception of evolution. He realized, what we have only recently proven, that parthenogenesis was possible. As a disciple of Plato, and therefore, at second hand, of Pythagoras, he had theories about the nature and site of the soul and this he allied with his system of evolution.

Aristotle was the greatest biological scientist of his time and some would have it of all time. But although he was a pioneer in many useful fields and although his reputation was great in succeeding ages none thought to continue his scientific work. Indeed his authority was quoted and he was followed not as a scientist but as a medical teacher. His doctrine of the constitution of matter was orthodox over many centuries. From the already ancient theory of Qualities (hot, cold, wet, dry) of Empedocles, he evolved a theory of Essences which in varying combinations and quantities entered into the constitution of all matter. Thus as a medical theorist Aristotle was no further advanced than Empedocles and while we still see in Aristotle one of the greatest scientists of all time, we see in him nothing of a great physician.

The school of Aristotle died in 287 B.C. with the death of his student Theophrastus who, even more properly than Aristotle, may be called the Father of Botany. Aristotle himself lived only a little longer than his friend and patron Alexander. They had seen little of each other for fourteen years during which Aristotle, in Athens, had been wresting her secrets from Nature, and Alexander, in Asia, had been seizing populous nations from their kings. The conquests of Alexander began in Egypt where he founded the great city which still bears his name, and to that city we now must go to continue the story of Medicine under the Greeks

EDITORIAL


J. C. Hossack, M.D., C.M. (Man.), Editor

Dr. Moorhead

Some weeks ago those who had been associated with him in the direction of the Manitoba Medical Services rendered a banquet to Dr. E. S. Moorhead. At the dinner many nice things were said about the guest of honour and all of them true. He had done well a difficult task and from his labours all of us have derived benefit. The profession in Winnipeg owes much to many men but to none does it owe more than it does to Dr. Moorhead.

In the dark days of the Depression no one escaped its pinch. Doctors could not thrive when many did, in some cases, most, of their patients were worthless. Merchants and landlords who supplied the indigents with food, clothing and shelter were recompensed by the City, but the doctors were expected to extend their charity to an unreasonable degree. There was a limit beyond which we could not go and beyond that limit we had been pressed. Then and only then did we decide to ask the City to lighten our burden. A committee of the Winnipeg Medical Society was formed to enter into discussions with the City Council and by the best of good fortune Dr. Moorhead was appointed its chairman with Dr. Alex Swan as secretary. Time may have dimmed our memories, but it has not lessened our debt to these two colleagues.

As chairman of the committee the heaviest burden lay upon the shoulders of Dr. Moorhead. Meetings with the authorities were of weekly, sometimes almost of nightly, occurrence. Those who could clearly see the claims of landlords and shopkeepers, were almost blind to ours. The thought of doctors asking payment for attendance upon those on relief was, to many, a shocking thing. There was much talk about the proverbial charity of doctors, and there was much opposition. Others who saw our needs and the justice of our requests were more sympathetic but they also were opposed to a further drain on a scanty treasury.

Our principal champion was Dr. Moorhead. He set forth our claims fairly and justly, and in the same spirit defended them. With unfailing courtesy and infinite patience (*suaviter in modo, fortiter in re*) he doggedly refused to recognize defeat. Said one Alderman "Moorhead was beaten time and again but he wouldn't admit it." This refusal to acknowledge, or even to recognize, defeat coupled with the solidarity he had wrought in the profession were the weapons which brought us victory. This triumph was largely a personal one. Of the friends he had among his opponents he lost none and, further, he won respect of those whom he had

not known before. Indeed it was largely the Council's trust in his integrity and straight forwardness that led them to yield.

The victory was chiefly, as it was intended to be, a moral one. With an eye on the future Dr. Moorhead insisted that the fees agreed upon be not regarded as normal fees. The possibility of a National Health Plan was before him and he was determined that the present generosity of the doctors should not cause them future loss.

When the Medical Relief plan went into effect Dr. Moorhead and Dr. Swan were honoured at a banquet given by the Society. It was an enthusiastic expression of our appreciation of the efforts put forth in our behalf.

When the plan went into effect Dr. Moorhead continued its supervision and for four years after the beginning of negotiations he gave his time freely. He did more than merely supervise activities. In addition he used the great amount of material as a source of data and statistics for use against the time when health care would become a government responsibility. Much of this was pioneer work for he had little in the way of precedent to guide him, but his reports were so excellent and so illuminating that groups in the United States requested many hundreds of copies.

With the outbreak of war, prosperity returned and Medical Relief became a thing of the past. But more and more it became apparent that a National Health Plan was certain and it became apparent also that unless we of ourselves laid the plan, the plan would be laid for us. Besides, the rising cost of medical care stirred many to urge a method that would make proper care possible and inexpensive.

Thus was born the Manitoba Medical Service Plan. Naturally it was to Dr. Moorhead that we turned for assistance in its organization. He offered his help but stressed his years and urged that a younger man be selected to carry it out. But no younger man was forth coming and so Dr. Moorhead carried on until a competent successor was appointed. That was a period of four years during which Dr. Moorhead committed his single reprehensible act—he took a seven-day vacation! Perhaps this can be forgiven for there are few of us who would be willing to spend so many days at our desk and so few hours in relaxation.

His task was never an easy one and at times it was unpleasant. Not everyone accepted cheerfully the decisions he announced and it was not always remembered that he spoke and acted not for himself but for the committees who made the

decisions. But there has always been agreement on one point, that Dr. Moorhead is fairness personified. For a period of eighteen years he has worked in our behalf and for our advantage. He has always served the profession as a whole. He has never played favorites.

Now that he has retired he can look back on a job well done. He has won and held the respect of the whole profession. He has made many friends and can have but few, if any, enemies. Let us hope that he will have much enjoyment over many years. An Oriental expression of good wishes goes thus: "May your shadow never grow less." I would add it here were it not for the fact that such a thing, in Dr. Moorhead's case, is impossible! Instead let me say for all of us "Lang may your lum reek."

On Diet

I find my thoughts turning towards food. Not in the pre-prandial sense, as when one wonders what he is likely to get at dinner-time, but in a more general way. The source of the following weighty cogitations is a little book entitled "Nature's Way to Health." You will, I hope, remember that Hippocrates said to his disciples, "The physician is the follower and not the teacher of Nature." Here, then, was something that appealed to the Hippocrates in me. It was given to me by one of those helpful patients who, having found, as she thought, the Elixir of Life was anxious to share her good fortune. Apparently the secrets, if any, which the booklet contained had already been enjoyed by a goodly company of no less than 175,000 people for that, according to the publisher, was the number of copies that had been printed.

The book fell open at a page whereon the first words to catch my eye were these: "It is against Nature to eat and drink at meals." The words were printed in italics which precluded the possibility of typographical error. They were therefore doubly striking and definitely thought-provoking. If one was not supposed to eat and drink at meals, when was it proper for him to consume his daily sustenance? And what was the purpose of having meal times if these were not associated with meals? Then it occurred to me that perhaps the best way to find out the answers to these questions would be to read further, which I did. I then discovered that I had been misled by sloppy English. What the author meant to say was that solids and liquids should not be consumed together, a very different thing from refraining from both.

This dictum was based upon the author's close personal observations upon the eating habits of cattle and horses. These creatures, it would seem, eat at one time and drink at another. Accepting

this practice as a natural and universal law our author saw in it the rule for men as well as for beasts. My own observations upon the lower animals are limited to those following a moderate interest in such dogs and cats as have, from time to time, been our household pets. These particular creatures seemed to enjoy excellent health and distemper or a passing joy rider brought their frolics to an untimely end; and all of them, I noticed, ate and drank simultaneously, quite ignorant of, or quite disobedient to, this important law. No doubt our author would have said that this merely proved his point.

After discussing the dietetic practices of horses, etc., our author again erupts into italics with the following statement: "It is against nature to mix varieties of food at the same meal." It is not enough to eat at one time and drink at another. It is also essential that only one kind of food be taken at each meal. The mixing of one's food is, apparently, as pernicious a practice as mixing one's drinks, and that, I am creditably informed, may lead to most disastrous results. So, my friends, if you want to enjoy long, healthful days, and, in the words of the author, "seek to promote human happiness" (as I am sure you do) then will you please confine your gastronomic activities to one thing at a time? It may be nuts, it may be figs, it may be raisins, or peradventure it may be some succulent fruit; but whatever it is let there be no mixing. Let your motto be "one thing at a time." And don't wash it down: just chew it down.

Likewise, on the information just acquired, I urge you to imbibe nothing but pip-and-peel water. Like Cowper's cup of tea—the cup that cheers but not inebriates—it will not inebriate. Unlike Cowper's cup it certainly will not cheer. But to make up for that it does things to the human insides that make them feel "top hole" and if you imbibe it freely enough you will find "Pip pip old chap" coming as a natural greeting. Incidentally you make the stuff by steeping orange or lemon pips and peels in cold water overnight. During the day you consume it ad libitum or until an understandable nausea sends you out for a bottle of something.

Now lest you may have doubts about this being nature's way to health I can quote you testimonials by the dozen. Everything from pox to pimples has, according to the author, found the regimen irresistible. Its general effect is as striking as the ointment which Helena (in All's Well That Ends Well) prescribed for the King of France's piles. (This also is good for piles). Within 24 hours she promised, "What is infirm from thy sound parts shall fly, Health shall live freely and sickness freely die."

Diets like the above are less common nowadays than in the pre-vitamin era. I remember, and you

may also, a vegetarian restaurant on Portage Avenue called the "Apple Tree." Its slogan was "When other foods do not agree, try Nut-meat at the Apple Tree." I was never inside the place so I cannot tell you whether the patrons sat at tables or climbed upon branches. Apparently either Nut-meat also failed or the other foods became agreeable for the place has long since closed its doors. Vegetarianism, however, although less vocative is not dead and is found even in high places such as those occupied by Bernard Shaw and Sir Stafford Cripps.

Some time ago I came across an oldish book which bore the title "A New System of Diet." It was based upon two facts (?) discovered by its author, first that all disease was due to magnetism either positive or negative, and second that all foods were also positively or negatively magnetic. The trick (which he explained) was to determine the magnetism of the particular disease to be treated. Then cure quickly followed the giving of a diet in which the magnetism of the disease was counteracted. The system worked well while it lasted for a quarter of the book was devoted to letters from grateful patients.

Literature like the above makes one wonder if he is in the right job. Never since the beginning of time have orthodox physicians been able to get such testimonials as have their contemporary "irregular" rivals. By all the rules of the game we should be out of business and the undertakers should be shivering in their shoes. How is it that quacks cure, or appear to cure, all their patients while we are satisfied with lesser results? Is it possible that they may be lying and their patients also?

Most quacks, whatever may be their particular brand of quacking, are strong on diet. Often this was helpful for in pre-vitamin days many people got thereby the chemicals their bodies lacked. Even today there are many cases of mild sub-clinical avitaminoses. In this matter we are much worse off than are the lower animals. Our mechanical skill and our civilization have proved to be two-edged swords. It is a strange reflection on human wisdom to see expensive machinery grinding the goodness out of our food, to see expensive technicians in expensive laboratories finding out why food is so un-nourishing, and to find that the purchase of expensive chemicals is a necessary expense if we are to enjoy more than the mere taste and substance of our food.

Animals have no such troubles. They eat what they need, a benevolent providence having furnished them with instinctive cravings and desires which they promptly satisfy. We have all seen pictures of Ralph the Rat, almost hairless, bleary eyed, peevish, impotent and aged before his time. But Ralph has always been the subject of experi-

ment. Left to himself he would have remained plump, sleek, with excellent vision and potent to a degree that a patriarch might envy. If the common, ordinary, useless rat can keep himself healthy with no guide but his instinct why should not man be able to do the same? He would do the same if manufacturers and cooks had not so bedeviled his food that he is cheated of much of its value.

Diet is a not unimportant part of treatment but it is a part that is often neglected. Not in the sense that diets are not prescribed but in the sense that such diets are more often stereotyped than individualized. The one sure clue as to what the patient needs is what the patient wants. If the craving seems abnormal one must remember that his condition also is abnormal. Pregnant women used to help themselves to chalky things because their condition required chalk. The same argument applies in other diseases. The cravings are not those of the patient but of nature. No one save the patient himself can say what he most needs. Therefore his wishes and desires should be heeded and, as far as possible, should be satisfied. When high-fat was the rule for diabetics they went on "sugar-busts." And when low-fat is carried to an extreme there is a craving and a physiological demand for more fat. The basic principle of dietetics is to discover the patient's cravings, to determine their physiological significance and to meet the desire as closely as possible. Food can be a decisive factor in cure especially when the food is palatable to the patient. Therefore the copying of a "diet list" and handing it to the patient is not enough.

There are many laymen who have peculiar ideas about food-stuffs especially when these are used therapeutically. Then they attribute almost magical properties to the foods in question. In my early days of practice I had as a patient a dear old lady (she was a dear old lady) who, eager to promote my fortunes, gave me her most cherished secret. It was a cure for rheumatism. She herself, poor thing, was sorely crippled but that, she said, was because she had come upon her remedy too late. The secret was this. A slice of brown bread was charred and then eaten dry. This, she was careful to explain, neutralized the "harmful acids." Next a small potato and a small onion, both raw, were sliced and eaten. Half an hour later a lemon was "juiced" and the juice, diluted, was swallowed. This was the cure and she told me in all sincerity that she had found it "wonderfully helpful."

Many fruits and vegetables have, over the ages, found themselves elevated to the rank of panaceas. Recently it was lemons and oranges. Longer ago it was cabbages. Pythagoras was a most profound believer in the virtues of the cabbage. An equally ardent devotee to brassica-therapy was Cato the

Censor. When he was not fulminating against the Carthaginians he was proving or praising the virtues of this fruit of fruits. "Cabbage," he said, "is good for everything." And not only cabbage but the urine of those who ate it. "Keep the urine of one who is wont to eat cabbage. Warm it. Immerse the patient in it. You will soon cure him by this treatment." How Cato would have exploited diabetes insipidus! "And if any ulcer or cancer arise in the breasts apply mashed cabbage, it will heal it." Few today will agree with Pythagoras or Cato on this score, and even Nicholas Culpepper, who had much to say in praise of its virtues, says "Cabbages are extremely windy whether you take them as meat or medicine; yea as windy a meat as can be eaten, unless you eat bagpipes or bellows."

Perhaps old gran'pappy McDonald was a brassic-addict. One summer, together with his family, he took part in the opening of the Beach cottage. Among other things attention was paid to the little Temple of Cloacina which sat discreetly hidden among the bushes. With gasoline and a mop the whole inside was swabbed and the remaining gasoline was then poured down the opening in Cloacina's altar. A little later gran'pappy sauntered over to lay his morning offering before the goddess. He arranged his garments, seated himself, opened the mail order catalogue at the proper place, lit his pipe, got it drawing and then, being a tidy old chap, he moved a little while he disposed of the still glowing match. Almost instantly there was a terrific explosion. The little house sailed into the air and the old man found himself thrown into a clump of briars. His alarmed family rushed to his aid. "What happened, gran'pappy, what happened?" cried one of them. The old man, dazed, bewildered, almost unclad, continued mechanically to pluck thorns from his buttocks and shook his head. "Gosh laddie," he finally said, "a canna understand it. It must have been something a et." And that is the substance of most diet fads.

The Dr. George F. Stephens' Memorial Fund

The life and work of the late George Stephens were so firmly interwoven with the Winnipeg General Hospital that it is only fitting some memorial should be set up in the hospital which he served as Superintendent for 21 years. A start has already been made with cheques sent in by friends from distant St. Louis.

At the age of 33, after graduation in 1907 from McGill, post-graduate work in England and Germany, and service in the First World War, he became in 1919 Superintendent of the Winnipeg General Hospital. Soon he became known as a

capable superintendent, then as an outstanding hospital administrator. In 1921 he was President of the Western Canadian Hospital Council. Ten years later he was elected President of the American Hospital Association, and he served as President of the Canadian Hospital Association for five years, 1939 to 1945. In 1935 he was elected member of the Board of Governors of McGill University and re-elected in 1940.

In the Winnipeg General Hospital he kept touch with all groups—the governors, the honorary attending staff, the nurses and the personnel. He had much to do with the starting and the success of the clinical luncheons at the hospital and with the creation of an esprit-de-corps in the institution. He was an early and enthusiastic advocate of the prepayment scheme for hospitalization which resulted in the formation of the Manitoba Hospital Service Association. When he was ill in the Royal Victoria Hospital, in 1940, after leaving Winnipeg he was deeply touched by the gift of flowers sent through a telegram signed by all the employees of the Winnipeg General Hospital.

In his early years he took an active part in football and rowing with the Winnipeg Rowing Club and he never lost the bonhomie and virility which go with these sports. With these qualities there were those which he inherited from his father—integrity and devotion to human welfare.

Dr. Stephens' many associates in hospital and medical circles will welcome this opportunity to do honor to him. The form of the Memorial has not been determined, but it has been decided that the Memorial will be one of usefulness to the hospital and of benefit to suffering patients. Subscriptions should be sent to Dr. Harry Coppinger, Superintendent of the Winnipeg General Hospital.

Ross Mitchell

Letter to the Editor

Dear Dr. Hossack:

I am sending the obituary of a class mate, James Walter Wickware, a graduate in 1899 of the Manitoba Medical College, who died at the Veterans Hospital at Lake Mills, Wisconsin, March 16 of this year.

After practising at Birtle for a number of years he moved to Regina where he was District Administrator for the Department of Pensions and National Health.

He retired to Aylmer, Ontario, and in 1940 moved to Wisconsin.

Dr. Wickware was born at Pakenham, Ontario, July 15, 1872.

He leaves a wife and one daughter.

R. K. CHALMERS

ASSOCIATION PAGE

Reported by M. T. Macfarland, M.D.

To the Graduating Class in Medicine 1948

Greetings to you and every good wish for your professional career. Several of you have already made yourself known when you called at 604 Medical Arts Bldg., to obtain an Enabling Certificate to write the exams of the Medical Council of Canada, or, later, to become registered to practise medicine in this Province. Many of you have sought advice concerning locations for Locum Tenens or for more permanent work. The office is at your disposal—use it as fully as you can. In turn support organized medicine that it may help you, and those who come along after you!

Federal Health Plan

On May 14th announcement was made to the House of Commons at Ottawa by Prime Minister Mackenzie King of a proposal to spend \$30,000,-\$60,000 yearly for the next five years to expand public health services to a point where a complete national health insurance plan may evolve. Details have appeared in the local press.

In the Speech from the Throne at the opening of the Session of January, 1943, the government's policy of sponsoring a comprehensive scheme of social insurance which would co-ordinate provincial and federal activities and which would include the establishment of a nation-wide system of health insurance was outlined.

Specific proposals were placed before the Dominion-Provincial Conference in August, 1945, but agreement with all the provinces was not effected. The Prime Minister indicated that "lack of agreement with certain provinces should not longer be allowed to stand in the way of a further immediate advance in the field of public health" hence the present announcement.

An early meeting will be called by the Minister of National Health and Welfare of "the appropriate technical officers of the various Provincial Health Departments and the Dominion Council of Health to work out—the detailed arrangements of the proposed health grants, and—the conditions to be attached to their administration."

The money will be spent by the provinces for Health Survey, General Public Health, Tuberculosis Control, Mental Health, Venereal Disease Control, Crippled Children's Crant, Professional Training, Public Health Research, Control of Cancer, and Hospital Construction.

The Canadian Medical Association, through the Executive Committee, Consultant in Economics,

and Economics Committee, has been in touch with officials of the Department in Ottawa on several occasions, and should have information for delegates who will attend the meeting of General Council in Toronto next month.

Membership

The membership of the Association now stands at 614. In spite of letters in January and March, and an additional reminder in the form of a bank draft, the Annual Membership fee remains unpaid for approximately 100 members of the profession. It is hoped that registrants who have recently started to practise in the Province may find it to their advantage to join the Canadian Medical Association and the Manitoba Medical Association by paying the joint fee which includes monthly subscription to the Canadian Medical Association Journal, and the Manitoba Medical Review.

"A Meeting Will Be Held . . ."

In spite of the unexpected rise of the thermometer on Wednesday, May 19th, several meetings occurred as scheduled. The University of Manitoba Convocation was held in the morning when the degree of Doctor of Science was presented to Dr. W. J. Boyd, formerly a distinguished member of the Medical Faculty.

At noon the Council meeting of the Winnipeg Medical Society preceding the Annual meeting of that body was convened in the Medical Arts Club rooms.

At two o'clock the semi-annual meeting of the Council of the College of Physicians and Surgeons met at the Medical College.

In the evening, following a meeting of the Nominating Committee, the Executive Committee of the Manitoba Medical Association met in the Medical Arts Club Rooms.

Several members of the profession attended two of the meetings, and in at least one case two other meetings were attended on the same day. The question was asked by one of his confreres when he took time off to make a living.

General Practitioners' Association

On Friday, April 30th, a meeting of the General Practitioners' Association of Manitoba was held in the Medical College to discuss the advisability of calling a special meeting of the Manitoba Medical Association to consider the fee schedule of the Manitoba Medical Service. Subsequently a questionnaire was directed to General Practitioners in

the province by the General Practitioner Group inquiring if the General Practitioner favoured an equalization of fees and, if so, whether he would attend a special meeting of the Manitoba Medical Association to consider the question. On May 14th, the Executive of the General Practitioners' Association invited representatives of the Manitoba Medical Association and Manitoba Medical Service to discuss the situation. A good spirit was maintained throughout the discussion and the decision was reached that representatives of the General Practitioners Group should contact representatives from the specialties in an endeavour to clarify the situation.

Winnipeg Medical Society

A special meeting of the Winnipeg Medical Society was convened in Theatre "A" of the Medical College on Wednesday, May 12th, when the guest speaker was Dr. Maxwell M. Wintrobe, Professor of Medicine, University of Utah, Salt Lake City. Dr. Wintrobe's subject was "The Studies of the Pathogenesis of the Anemia of Infection."

The Annual Meeting of the Winnipeg Medical Society was held in Theatre "A" of the Medical College on Friday, May 21st, 1948, with the President, Dr. C. E. Corrigan in the chair. Following the presentation of reports, including that of the Nominating Committee, balloting resulted in the election of the following slate of officers for the ensuing year: President, Dr. R. A. Macpherson; Vice-President, Dr. T. E. Holland; Secretary, Dr. K. R. Trueman; Treasurer, Dr. S. A. Boyd; Trustee, Dr. K. Borthwick-Leslie. The past president certificate was presented to Dr. W. F. Tisdale, and Dr. Ross Mitchell introduced Dr. Fred A. Young, who was presented with a certificate of Life Membership in the Society. A letter from the General Practitioners' Association urging that steps be taken to obtain further hospital accommodation was sent to the Manitoba Medical Association for reference to the appropriate bodies. The donation of \$500.00 to the building fund of the Children's Hospital was approved by the meeting. Dr. C. E. Corrigan presented the subject "Evolution of Disease" as the presidential address and before handing the meeting over to the new president thanked the officers and members of the Society for their co-operation.

District Medical Societies

Northern District Medical Society

The first general meeting of this Society was held at Dauphin on the evening of Wednesday, May 12th. The following attended: Doctors R. E. Dicks (Chairman), R. M. Creighton, M. Kagan, A. S. Little, M. Potoski, W. G. Ritchie (Secretary-Treasurer), all of Dauphin; W. Baschucky, Winni-

pegosis; S. W. Fox, Gilbert Plains; J. S. Collins, Swan River Health Unit; G. L. Adamson, E. James, M. T. Macfarland, of Winnipeg.

Following a tour of the hospital under Miss Pearson, Superintendent, and delicious chicken dinner prepared under the watchful eye of the dietitian, Miss MacKinnon, the scientific session got under way. Dr. E. S. James discussed Low Back Pain, and showed several X-ray plates. Dr. G. L. Adamson's paper on "Seizures" was copiously illustrated by lantern slides. Dr. J. S. Collins reviewed the Health Scheme at present operating in New Zealand. Following the formal session refreshments were served, and a vote of thanks proposed to the hosts and hostess. The meeting adjourned to the home of Dr. M. Potoski.

Southern District Medical Society

The first meeting for the season of this society will be held at 2.00 p.m. (Standard Time), on Thursday, June 10th, at the New Altona Hospital, where an internist and a urologist will present papers.

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Winnipeg Medical Society
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REFERENCES:

1. *Proc. Soc. Exper. Biol. & Med.* 55, 228, 1944.
2. *Am. Heart Journ.* 28, 759, 1944.
3. *Act. Med. Scandin.* 104, 527, 1940.



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SOCIAL NEWS

Reported by K. Borthwick-Leslie, M.D.

O.K., so I mix up Dentists and Life Insurance Officials with the Profession. At least no Undertakers as yet. I give up, either 604 gives me a list of M.D.'s or you keep me posted as to your important events. If you are proud of that baby, etc., let me know, of course, if you aren't!!

Being famous hasn't changed our old friend, Dr. Max. Wintrobe, much. It was certainly grand to see him again, also so many other old friends at Dr. Beckman's de luxe cocktail party in honor of Max.

Dr. Ellen Taylor, President of the Medical Women, entertained at tea at the P. & B. Club, Sunday, May 9th, in honor of the Graduating Girls—Doctors Mavers, Mathers and Ledingham. Election of officers for the 1948-49 term was completed and the new victims are: President, Dr. K. Borthwick-Leslie; Vice-President, Dr. Jessie McGeachy; Secretary, Dr. Anaid Mocradian; Treasurer, Dr. Bella Kowalson. Woe is me!!

Drs. McGeachy and Anna Wilson spent the week-end of May 9th in Minneapolis, being steeped in opera. They report a most enjoyable holiday and beautifully produced opera.

Dr. and Mrs. Pierce and family are back from a week's holiday in Minneapolis, where Dr. Pierce was observing surgical procedures.

Welcome to Dr. George McQuade, University of Toronto, P.G. in Montreal and Ottawa! O/S 6th C.C.S. and 22 General Hospital, who arrived this week to be Senior Staff Anaesthetist at Deer Lodge Hospital. A very talented, "personable" addition to the Group of Anaesthesiologists.

It was indeed a shock to read that Dr. George Stephens had died, while visiting his daughter in Vancouver. Sincere sympathy to Mrs. Stephens and family.

Welcome back to Dr. Hossack. I haven't seen him yet, but understand the old gleam, not boogie-woogie, has returned.

Dr. and Mrs. Stewart McInnes announce the engagement of their daughter, Margaret, to John Lester Larson, Denver, Colorado. The wedding will take place June 15th, in Westminster Church, at 7.30 p.m.

Overheard at the Bar, **not** that one on Main Street unofficial conclave by Messrs. Frossts, Ayers, Parke Davis, etc.: "Now if the Doctors in Winnipeg only had enough sense to make appointments for us, they could see one of us a day. We'd finish work at a decent time, and they wouldn't be bothered by half a dozen in one day. That sounds like a swell idea to me. The detail boys are all good scouts, they do us many a good turn, they **have** to check us off the lists, but have you ever, around 6 p.m., just gotten your snow boots and woolies on and find a couple waiting in the outside office? Let's organize and co-operate with them, at least for the golfing season!!

Congratulations to Dr. H. D. Kitchen who, in San Francisco, in April, was elected to the American College of Physicians.

The Profession and all of Winnipeg will join me in sympathy to Dr. Bruce Chown and family and friends in the tragic loss of Mrs. Chown. We have lost one of our most popular, public spirited, talented gentle ladies.

Hats off to Dr. Ada (Wilson) Wallace, Emerson who proved to be almost a "Superwoman" in her work, with the flood stricken community.

Bon Voyage to Dr. Eleanor Black who leaves shortly for Post Graduate study overseas, via combined work and play in New York and other American centres.

Congratulations to our erstwhile friend and professor, Dr. William Boyd, on receiving the Doctor of Science (Honoris Causa) at our most impressive University Convocation this week.

Dr. and Mrs. Hugh Malcolmson, Charleswood, announce the birth of Francis Ian, April 22nd.

Dr. and Mrs. M. R. Hodgson, Steinbach, Manitoba announce the arrival of Brian John, April 26th.

By the grapevine, I hear that Dr. Clair Rumball now of Regina, is motoring to Victoria via the Northern States, Yellowstone Park, etc., and expects to do most of B.C. We will be hearing first hand reports of all our other boys who have had the good sense to immigrate to the Coast.

Reminding me that Dr. Graham Mills has also migrated, am not sure to what part, but good luck to him.

COLLEGE OF PHYSICIANS AND SURGEONS OF MANITOBA

(Continued From May Issue)

The Registrar explained that the question had arisen in connection with life membership following thirty years consecutive practice, and age 65, whether a period of absence from the Province, when a doctor is doing post-graduate work, should be deducted from his 30 consecutive years.

Another question that was raised was that if a man leaves the Province for a number of years and practices in another part of the country, on his return, should he pay all the fees or just the current year. The Registrar said that Section 36 (2) of the Medical Act was not very clear in this regard, and that he had obtained the solicitor's opinion. The solicitor thought that any arrears should be cleared up, and just the current year's fees paid.

These matters were referred to the Council Meeting.

Change of Name.

For the information of the Committee, it was reported that Dr. _____ had changed his name to Dr. _____. The Registrar stated that Dr. _____ had requested that a new certificate of registration be issued, and he had written to the University of Manitoba and the Medical Council of Canada requesting their policy in this question. The Medical Council of Canada followed our policy, that is changing the records, but not changing the original certificate nor issuing a new one; and the University issues a special certificate announcing that the person has changed his name.

10. Sterilization.

The Registrar stated that he had had an inquiry from one of the members regarding the legal status of voluntary sterilization. He presented replies from the Canadian Medical Protective Association, and the solicitor, to inquiries made. The following is an extract from the letter, dated November 28, 1947, from the Canadian Medical Protective Association:

"Therefore in our advice to members inquiring from us we always finish our letters by saying that under no circumstances with, or without, permission should they do any voluntary sterilization and no sterilization unless it is an incidental part of a surgical or medical procedure necessary for the preservation of life or health of the patient, and then only after adequate explanations to husband and wife." Consent forms should be signed by both husband and wife.

The following is an extract from the letter, dated December 15, 1947, from the solicitor:

"I found a new textbook on the Law and Practice of Medicine written by one K. G. Gray,

Lecturer in Medical Jurisprudence and Forensic Psychiatry at the University of Toronto. He has a chapter on sterilization. He states that it is justifiable in order to save the life of the patient; where it would benefit the health of the patient; or where it is authorized by statute. He also says that sterilization solely for eugenic reasons is illegal even with the patient's consent. He also comments upon the fact that there is considerable authority for this view of the law, and that the Courts base their attitude upon the ground that it is contrary to public policy for a person to be sterilized even with his own consent."

11. Communication With Registrar, College of Physicians and Surgeons of Saskatchewan.

The Saskatchewan Government are considering opening their Medical Act so that they might have reciprocity with other Provinces in Canada and with the General Medical Council of Great Britain. Dr. Ferguson called the Registrar requesting information on our reciprocal arrangements, and requirements for registration in Manitoba.

12. Manitoba Medical Service.

As the College of Physicians and Surgeons has a financial interest in the Manitoba Medical Service Association, the Registrar reported that a joint committee has been set up at the request of the Manitoba Medical Service, consisting of three members each of the Manitoba Medical Service, and the Manitoba Medical Association, to revise the schedule of fees which was put out in 1946, as the schedule applies to the Medical Service.

13. Irregular Practitioner.

For the information of the Committee, the Registrar presented correspondence from the Attorney General's office, advising that Dr. _____, who is registered under the Naturopathic Act, pleaded guilty to administering drugs for internal use contrary to section 25 of the Naturopathic Act. A stay of proceedings was entered under the previous charge laid under section 9, s.s. 1 of the Basic Sciences Act. Dr. _____ paid a fine of \$25.00 and costs of \$3.50 in default of which he was ordered to be imprisoned for one month. The communication also stated further that _____ had been censured by the Naturopathic Association for his actions in connection with this matter.

The Registrar presented the report of the meeting of the Manitoba Cancer Relief and Research Institute, which was held January 26, 1948. Prior to this meeting the Medical Advisory Committee was called to consider whether cancer diagnostic clinics should be instituted in connection with the Cancer Relief and Research Institute. The Union

of Municipalities, at their last meeting requested that facilities for free cancer detection be set up. The finding of the Advisory Board was that if the municipalities were really interested, that they should pay hospitalization costs.

The Registrar was instructed to ascertain whether there was an additional representative on the Board of the Cancer Institute, in addition to the Registrar and President.

14. Inquiry From the Department of Vital Statistics

The Registrar reported that he had a telephone communication from the Acting Recorder of Vital Statistics, inquiring whether an interne may be allowed to sign birth certificates in his own name, so that accurate statistics would be available. All certificates that go to the Department are signed by the doctor who is in charge of the service at the hospital. It was suggested that an interne, under a temporary licence, could sign statistic cards. The Registrar reported that so far only one interne had applied for a temporary licence.

After considerable discussion the Registrar was instructed to reply to the Acting Recorder of Vital Statistics, stating that statistic cards should not be signed by unregistered doctors or internes.

15. Committee Reports.

(a) Registration Committee.

The Registrar reported that at the last meeting of the Registration Committee on February 6th, 1948, the application for an Enabling Certificate from Dr. _____ has been considered. A letter from the Dean of the College of Medical Evangelists, stated that Dr. _____'s graduation diploma would be dated January 2, 1948, but that he would not complete his fifth year internship at the White Memorial Hospital until June 3, 1948. The Committee deferred the application pending receipt of his diploma and completion of his internship year.

Enabling certificates had previously been granted to graduates of the College of Medical Evangelists, but the applicants had all had post-graduate training.

The Committee were of the opinion that Dr. _____ should complete his fifth year internship before being granted an enabling certificate.

Dr. _____ reported that in the minutes of the Registration Committee meeting dated January 9, 1948, Dr. _____ was reported as having graduated from the College of Medical Evangelists. He stated that he was a graduate of the University of _____. He reported that Dr. _____ had been requested by the Basic Science Committee to write a practical examination in Hygiene. Although the University of _____ devoted 100 hours to Hygiene, the full time is devoted to didactic work, with no practical work at all.

He also reported that although Dr. _____ was registered with the General Medical Council of Great Britain, thereby eligible for registration in Manitoba, the Basic Science Committee found him to be deficient in all subjects except Physiology. He stated that the former Registrar had pointed out the clash between the Basic Science Act and the Medical Council of Canada Act, and the British Medical Act.

He stated that Dr. _____ graduated from _____ University, which is not a class A school and is not recognized by the American Medical Association. He pointed out that Dr. _____ has his L.M.C.C., was a Certified Specialist in Ophthalmology of the Royal College of Physicians and Surgeons of Canada, was registered in British Columbia and Nova Scotia, and was registered in Great Britain.

(b) Dr. _____ re Use of _____ (Deceased Name)

The Registrar reported that at a meeting of the Discipline Committee held that afternoon, the feeling was that there was no legal impediment to the use of the _____ (deceased) name by Dr. _____.

Letters of complaint against Dr. _____ and Dr. _____ were also considered, but were postponed pending further clarification.

Also announcement cards were presented which had been distributed by two doctors, and dealt with by the Committee.

(c) Education Committee.

The Registrar reported that the questionnaire forwarded from the World Medical Association had been considered at a meeting of the Education Committee, and presented it for the information of the Executive Committee.

The following resolution was approved:

"That the reply to the questionnaire received from the World Medical Association be taken as read."

16. Correspondence.

(a) Request for List of Doctors.

The Registrar reported that he received many requests for lists of the doctors in the Province of Manitoba, and asked the Committee for some guidance as to whom he should issue lists. He thought that lists should be available only to those who were directly associated with the Profession. The Committee decided to leave the matter of issuing lists to the discretion of the Registrar.

(b) Canadian Red Cross.

The Registrar presented a mimeographed letter from the Red Cross requesting a donation to their National Appeal. He reported that the Manitoba Medical Association had received a similar letter. The Committee were of the opinion that as each doctor is canvassed individually, there was no need for a donation from the College.

(To Be Continued)

Department of Health and Public Welfare
Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1947		1946		TOTALS	
	Mar. 21 to Apr. 17, '48	Feb. 22 to Mar. 20, '48	Mar. 23 to Apr. 19, '47	Feb. 23 to Mar. 22, '47	Dec. 28, '47 to Apr. 17, '48	Dec. 29, '46 to Apr. 19, '47
Anterior Poliomyelitis	1	2	0	0	3	0
Chickenpox	233	227	80	82	918	369
Diphtheria	1	2	9	7	6	38
Diphtheria Carriers	0	0	2	1	0	8
Dysentery—Amoebic	0	0	0	0	0	0
Dysentery—Bacillary	0	0	0	0	0	1
Erysipelas	1	1	2	3	6	16
Encephalitis	0	0	0	1	0	1
Influenza	19	14	17	3	37	36
Measles	29	21	1193	1628	108	4472
Measles—German	1	2	8	6	23	18
Meningococcal Meningitis	2	2	1	1	5	6
Mumps	200	183	201	310	688	862
Ophthalmia Neonatorum	0	0	0	0	0	0
Pneumonia—Lobar	18	17	18	8	54	67
Puerperal Fever	0	0	0	1	0	1
Scarlet Fever	5	11	17	12	35	79
Septic Sore Throat	3	5	1	3	9	7
Smallpox	0	0	0	0	0	0
Tetanus	0	0	1	0	0	1
Trachoma	0	0	0	0	0	0
Tuberculosis	70	111	85	79	316	216
Typhoid Fever	1	0	0	0	2	0
Typhoid Paratyphoid	0	0	0	0	0	0
Typhoid Carriers	0	0	0	0	0	1
Undulant Fever	0	0	0	0	0	1
Whooping Cough	29	28	83	89	152	305
Gonorrhoea	113	111	151	163	459	646
Syphilis	47	40	48	35	172	178
Diarrhoea and Enteritis, under 1 yr.	27	11	11	6	48	34

FOUR-WEEK PERIOD, MARCH 21 TO APRIL 17, 1948

DISEASES (White Cases Only)	*743,000 Manitoba	*906,000 Saskatchewan	*3,825,000 Ontario	*2,962,000 Minnesota
Approximate population.				
Anterior Poliomyelitis	1	2	1	3
Chickenpox	233	54	1507	—
Diarrhoea and Enteritis	27	2	—	—
Diphtheria	1	3	5	12
Dysentery Amoebic	—	—	—	2
Erysipelas	1	1	7	—
Influenza	19	—	114	—
Leth. Encephalitis	—	—	1	—
Malaria	—	—	—	4
Measles	29	25	4776	1779
Measles, German	1	6	91	—
Meningococcal Meningitis	2	1	2	2
Mumps	200	298	1101	—
Pneumonia Lobar	18	—	—	—
Scarlet Fever	5	9	346	173
Septic Sore Throat	3	—	2	—
Tuberculosis	70	26	134	253
Typhoid Fever	1	2	—	—
Typh. Para-Typhoid	—	—	1	—
Undulant Fever	—	1	6	8
Whooping Cough	29	8	85	64
Gonorrhoea	113	—	296	—
Syphilis	47	—	188	—

Flood Conditions should be a thing of the past by the time this issue of the Review reaches your desk. To date of writing (May 12) it had not caused any cases of typhoid fever or other serious diseases. Great numbers have been immunized against typhoid and a great deal of work has been done in sterilization and cleaning up of flooded basements and buildings.

The Connaught Medical Research Laboratories announce the **withdrawal from distribution** of their tannic acid precipitated scarlet fever streptococcus toxin. This was the antigen given intradermally. They also announce that after August 1st **pertussis vaccine**, either alone or combined with diphtheria toxoid, will be supplied only in their new **four dose** type which requires only one c.c. per dose. This material comes in one person and nine person size packages.

DEATHS FROM REPORTABLE DISEASES

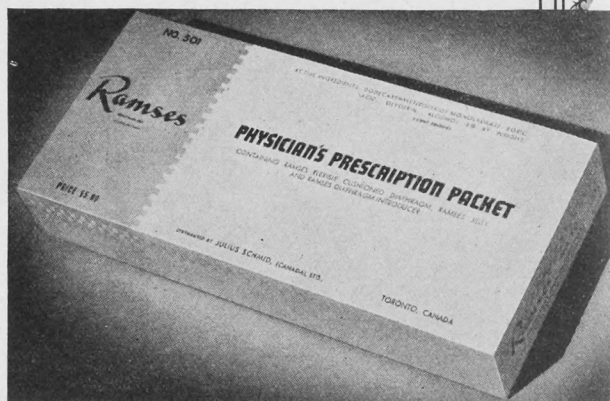
For Four-Week Period March 24 to April 20, 1948

Urban—Cancer, 48; Influenza, 2; Pneumonia Lobar (108, 107, 109), 4; Pneumonia (other forms), 8; Syphilis, 1; Tuberculosis, 6; Whooping Cough, 1; Diarrhoea and Enteritis (under 2 years), 4. Other deaths under 1 year, 18. Other deaths over 1 year, 169. Stillbirths, 20. Total, 207.

Rural—Cancer, 36; Influenza, 8; Pneumonia Lobar (108, 107, 109), 5; Pneumonia (other forms), 16; Scarlet Fever, 1; Syphilis, 1; Tuberculosis, 22; Whooping Cough, 1; Diarrhoea and Enteritis (under 2 years), 2; Dysentery, 1; Mycoses, 1; Hodgkin's Disease, 1. Other deaths under 1 year, 20. Other deaths over 1 year, 165. Stillbirths, 16. Total, 201.

Indians—Influenza, 5; Pneumonia Lobar (108, 107, 109), 1; Pneumonia (other forms), 4; Puerperal Septicaemia, 1. Other deaths under 1 year, 7. Other deaths over 1 year, 3. Stillbirths, 0. Total, 10.

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*Human Fertility 10; 25 (Mar.) 1945.

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BOOK REVIEWS

"Surgical Treatment of the Abdomen," Bancroft, Frederic W., Wade, Preston A.; J. B. Lippincott Company, 1947.

This up-to-the-minute book is highly recommended for the general surgeon and surgical resident alike. In it, 36 outstanding contributors have presented sound medical treatment for all surgical conditions of the mouth and esophagus; gastrointestinal tracts; rectum and anus, and associated organs, including splendid chapters on liver; biliary tract; pancreas and spleen.

Among the most commendable aspects of this text are the sections on Anaesthesia; Pre and Post-operative Treatment; Blood and Plasma Transfusions; and an excellent discourse by Swenson and Reid on the Fundamental Principles of Surgical Technic. Rarely do we find such subjects treated so clearly and presented in such readable manner. These chapters are not meant to be monographs on the subjects, nevertheless, they contain everything of value without being too detailed. Another valuable feature of this volume are the many excellent illustrations some of which are in color. All illustrations are of a very high

order and serve to clarify the various points in Surgical Therapy and Technic.

Unlike most texts which try to cover too vast a field, neither the differential diagnosis nor pathology are discussed except where necessary to give a background for treatment.

It is refreshing to find a text on Surgical Treatment based on outstanding Authors' own methods rather than a summary of various theoretical procedures which often times leave the reader in doubt as to what course of action has proven most efficacious. The list of contributors reads like a "Who's Who" of surgery on this continent. All have previously proven themselves surgically and what is more important, have demonstrated the ability to impart their knowledge to others. The Junior Surgeon may read this book in the knowledge that the treatment suggested has been well established. The Senior Surgeon will find many hours of stimulating reading and will refer to it again and again.

One realizes very early in reading "Surgical Treatment of the Abdomen" that Bancroft and Wade have succeeded in editing a text which will be welcomed by the surgical profession.



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